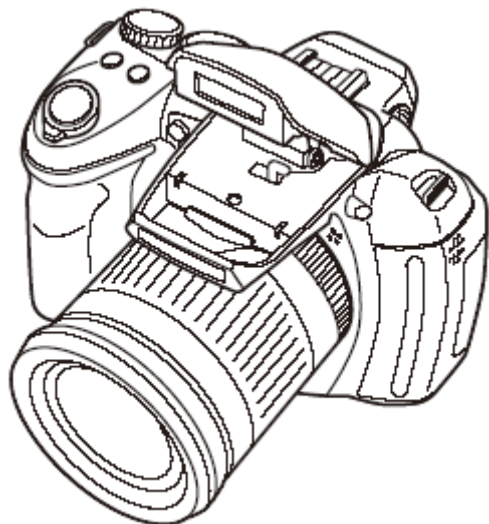


FUJIFILM

DIGITAL CAMERA



FinePix HS20EXR

SERVICE MANUAL

JP/US/RU/EG/AS/EE/AU/IN/ID-model

CAUTION

- BECAUSE THIS PRODUCT IS RoHS LEAD-FREE COMPLIANT, USE THE DESIGNATED AFTER-SALES PARTS AND THE DESIGNATED LEAD-FREE SOLDER WHEN PERFORMING REPAIRS. (Refer to page 3)

WARNING

- THE COMPONENTS IDENTIFIED WITH THE MARK " ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR SAFETY.
- PLEASE REPLACE ONLY WITH THE COMPONENTS SPECIFIED ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST.
- IF YOU USE PARTS NOT SPECIFIED, IT MAY RESULT IN A FIRE AND AN ELECTRICAL SHOCK.

SAFETY CHECK-OUT

After correcting the original problem, perform the following safety check before return the product to the customer.

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splasher and bridges.

2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.

3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.

4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

5. Check the B + voltage to see it is at the values specified.

6. Make leakage - current measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

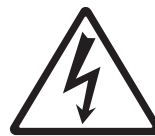
7.



CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE 2.5 AMPERES 125V/250V FUSE.

ATTENTION: AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME, TYPE 2.5 AMPERES, 125/250 VOLTS.

8.



WARNING!
HIGH VOLTAGE

WARNING: TO REDUCE THE ELECTRIC SHOCK, BE CAREFUL TO TOUCH THE PARTS.

RoHS lead-free compliance

With the exception of parts and materials expressly excluded from the RoHS directive, all the internal connections and component parts and materials used in this product are lead-free compliant under the European RoHS directive (*1). Use the designated after-sales parts and the designated lead-free solder when performing repairs.

*1: Definition of lead-free

A lead content ratio of 0.1 wt% or less in the applicable locations (solder, terminals, electronic components, etc.)

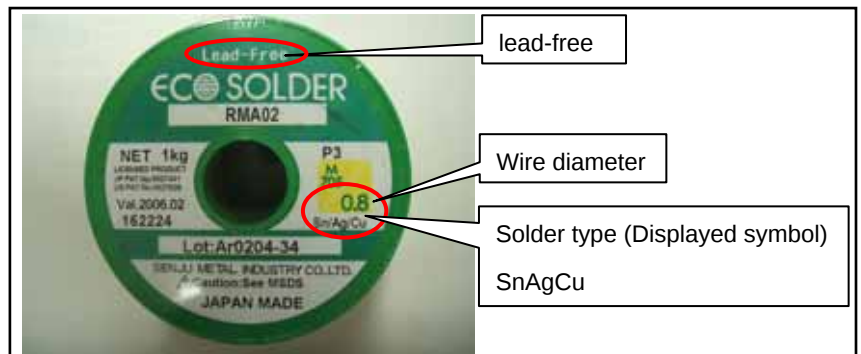
<Lead-free soldering>

When lead-free solder is used, the solder tends to be less workable than when eutectic solder is used. When carrying out repairs, use a designated lead-free solder, bearing in mind the differing work practices for eutectic solder and lead-free solder.

■ Differences in the soldering work for lead-free and eutectic solder

	Eutectic solder (Sn-Pb)	Lead-free solder (Sn-Ag-Cu)	Remark
Melting point	183°C	220°C	
Soldering iron temperature	283°C	320°C	The bonding temperature that will give the best bond strength.
Wetting	Good	Poor	
Surface	Gloss	Matte	

■ Recommended equipment



■ Soldering iron maintenance

Because of the high soldering iron temperature in lead-free soldering, there is rapid carbonization of the flux adhering to the tip of the soldering iron.

- (1) Always cover the tip of the soldering iron with solder when it is not being used.
- (2) If the tip is black from carbonization, wipe it gently with a paper towel soaked in alcohol until the solder will wet.

MEMO

1. Disassembly

1-1. Removing the CONST REAR, CONST LCD

- (1) Remove COVER SHOE the direction of the arrow



- (2) Remove the 4 screws (N-MSNM1.7×4.5)

- (3) Remove SHOE the direction of the arrow



(4) Remove the 2 screws (BTYM1.7×5.5)

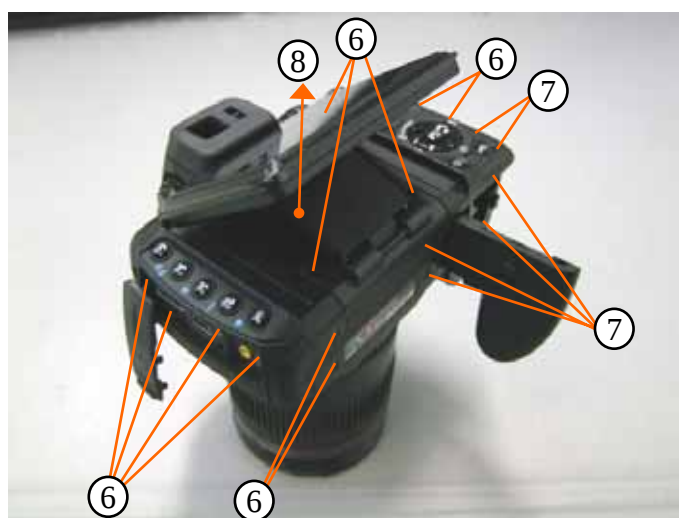
(5) Remove ASSY PLATE STOPPER the direction of the arrow



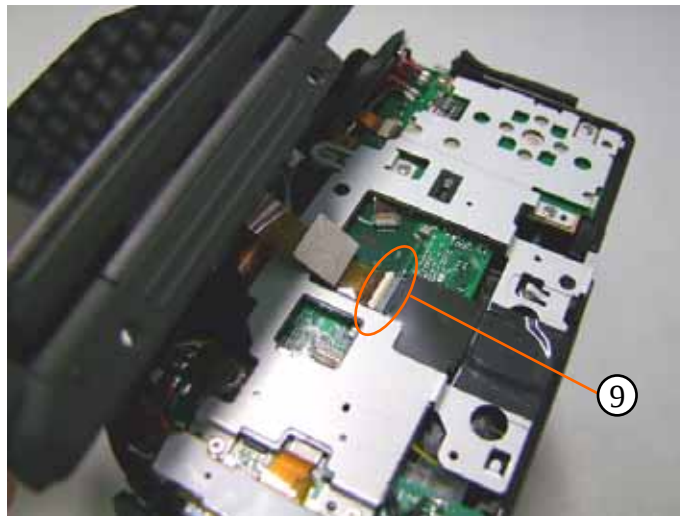
(6) Remove the 11 screws (MS2M1.7×4.0B)

(7) Remove the 6 screws (BT2M1.7×4.0B)

(8) Remove ASSY CONST REAR the direction of the arrow

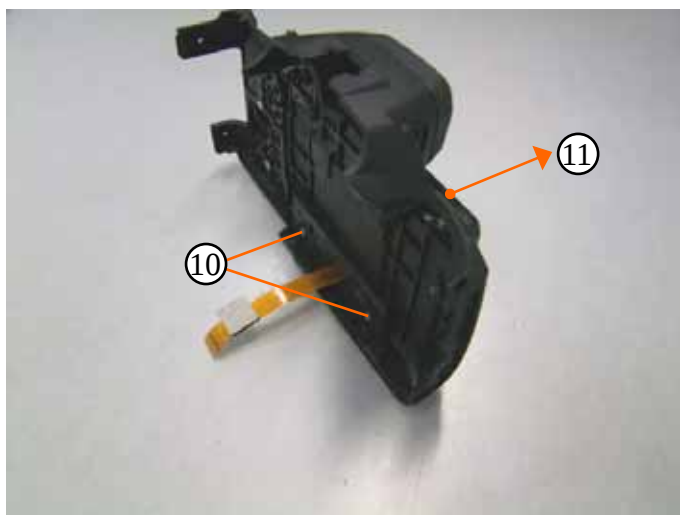


(9) Remove the flexible cable.



(10) Remove the 2 screws (BT2M1.7×5.0)

(11) Remove CONST LCD the direction of the arrow

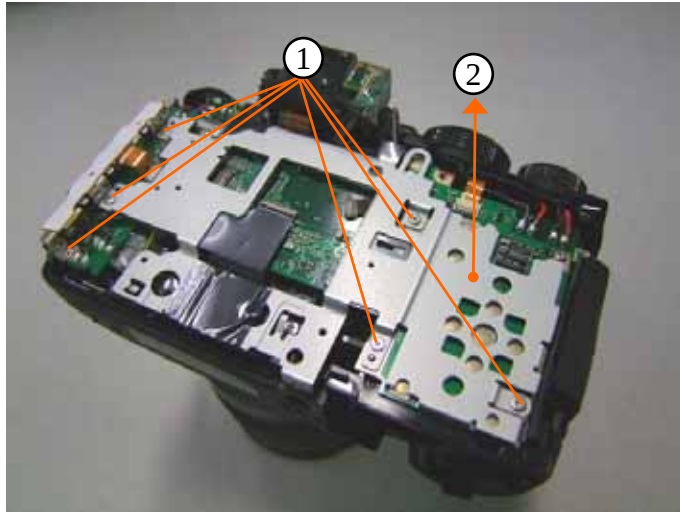


[Assembly]

Assemble by performing the disassembly procedure in reverse.

1-2. Removing the FRAME MAIN/CONST SIDE FPC

- (1) Remove the 6 screws (BT2M1.7×4.0)
- (2) Remove FRAME MAIN in the direction of the arrow.

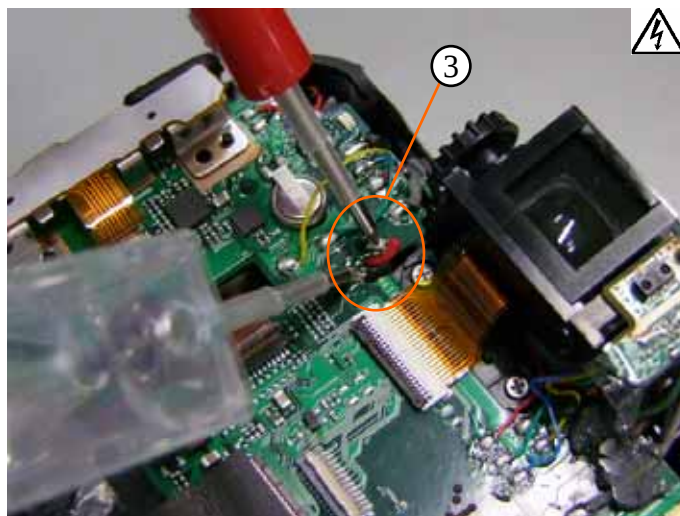


[Main capacitor discharge points]

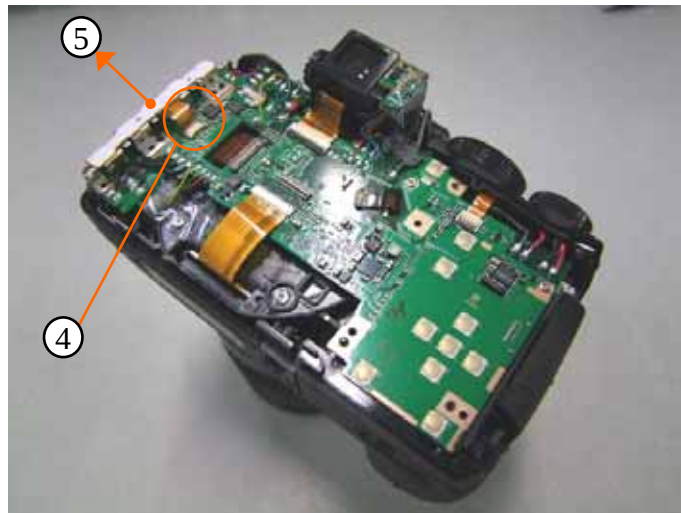
 Take care not to touch the main capacitor terminals before discharging the capacitor.

- (3) Peel off the UL TAPE.

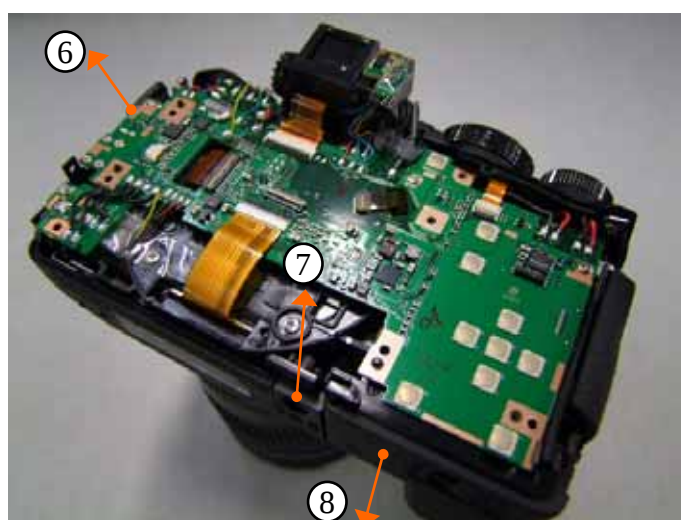
Discharge the main capacitor as shown in the figure.



- (4) Remove the flexible cable
- (5) Remove CONST SIDE FPC in the direction of the arrow.



- (6) Remove COVER JACK in the direction of the arrow.
- (7) Remove BASE TRIPOD in the direction of the arrow.
- (8) Remove CONST COVER BATTERY in the direction of the arrow.

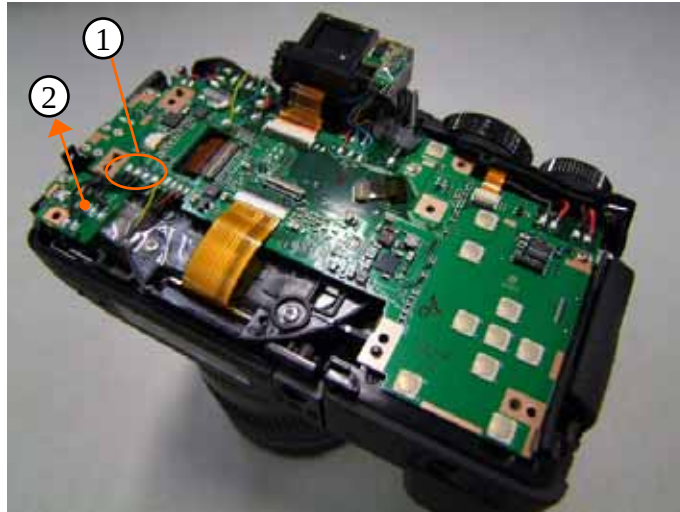


[Assembly]

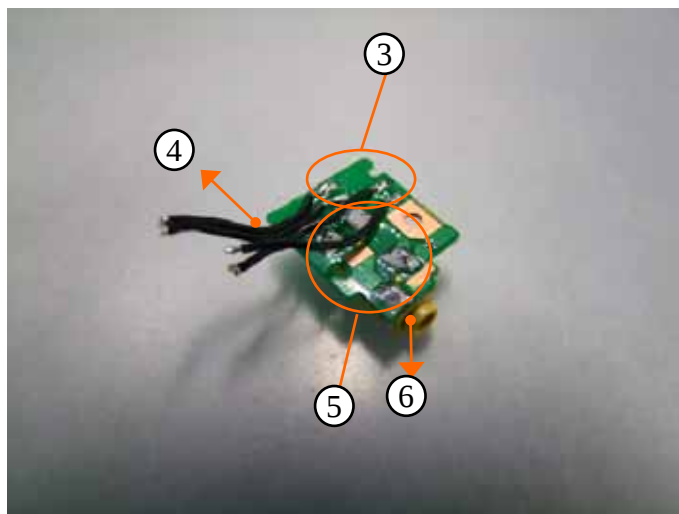
Assemble by performing the disassembly procedure in reverse.

1-3. Removing the JACK

- (1) Remove the solder in 4 locations.
- (2) Remove Y6231_JACK_ASSY in the direction of the arrow.



- (3) Remove the solder in 4 locations.
- (4) Remove harness batt B in the direction of the arrow.
- (5) Remove the solder in 4 locations.
- (6) Remove JACK_MINI 4PYELLOW in the direction of the arrow.

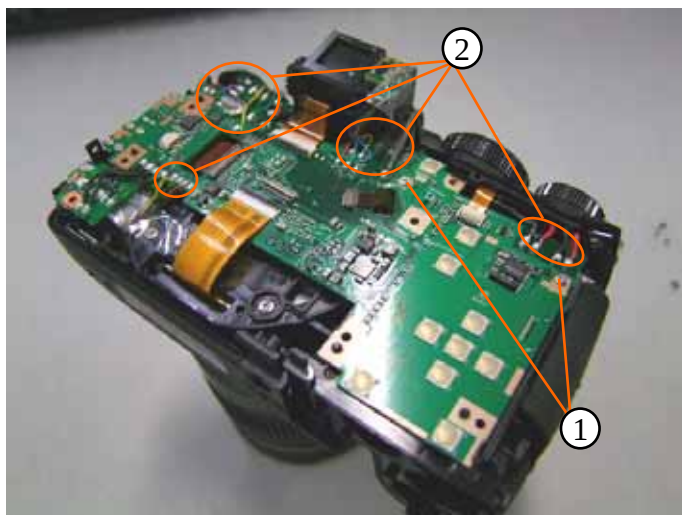


[Assembly]

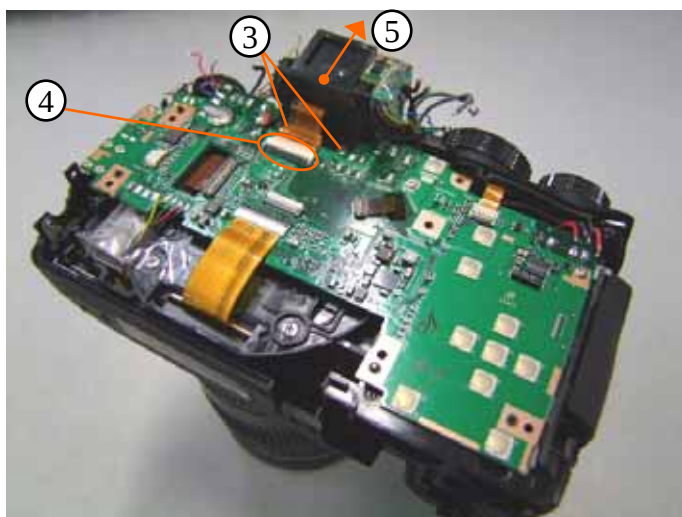
Assemble by performing the disassembly procedure in reverse.

1-4. Removing the CONST MAIN

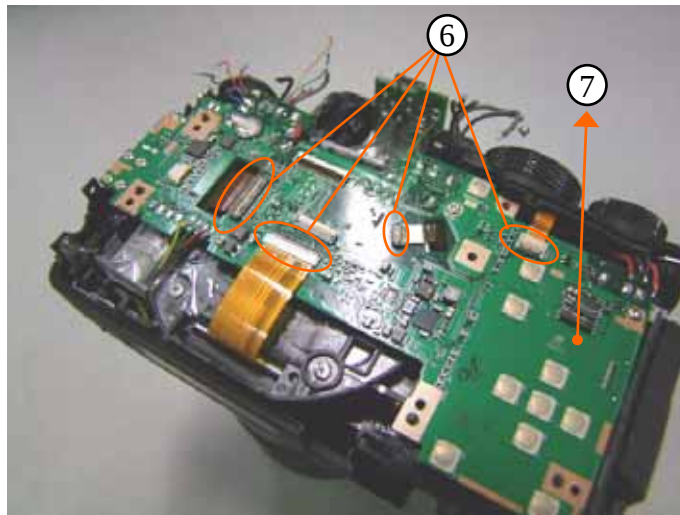
- (1) Remove the 2 screws (BT2M1.7×4.0) .
- (2) Remove the solder in 27locations.



- (3) Remove the 2 screws (BT2M1.7×4.0) .
- (4) Remove the flexible cable.
- (5) Remove CONST EVF in the direction of the arrow.



- (6) Remove the flexible cable.
- (7) Remove CONST MAIN in the direction of the arrow.

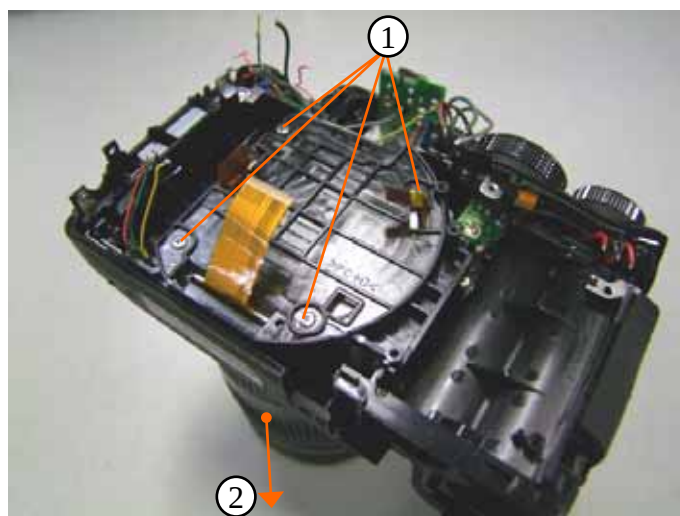


[Assembly]

Assemble by performing the disassembly procedure in reverse.

1-5. Removing the LENS ASSY Y-6231

- (1) Remove the 4 screws (MS5M2.0×7.5)
- (2) Remove LENS ASSY Y-6231 in the direction of the arrow.

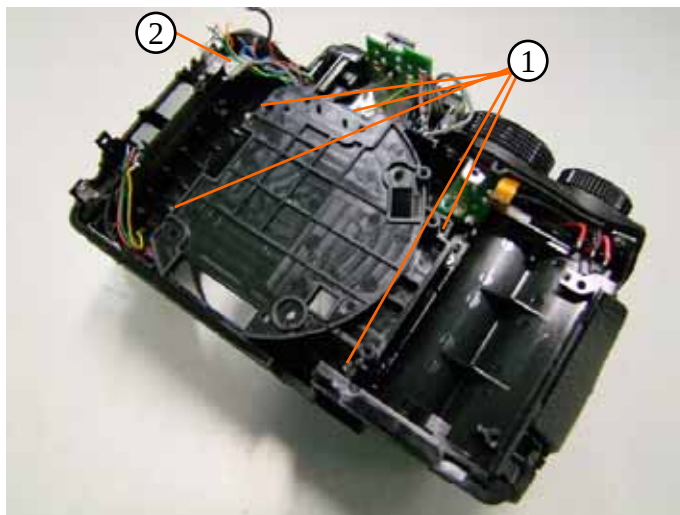


[Assembly]

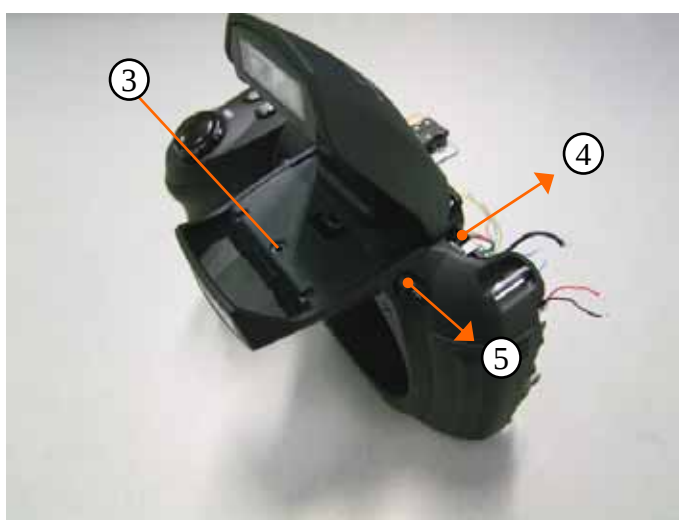
Assemble by performing the disassembly procedure in reverse.

1-6. Removing the CONST HOLDER LENS

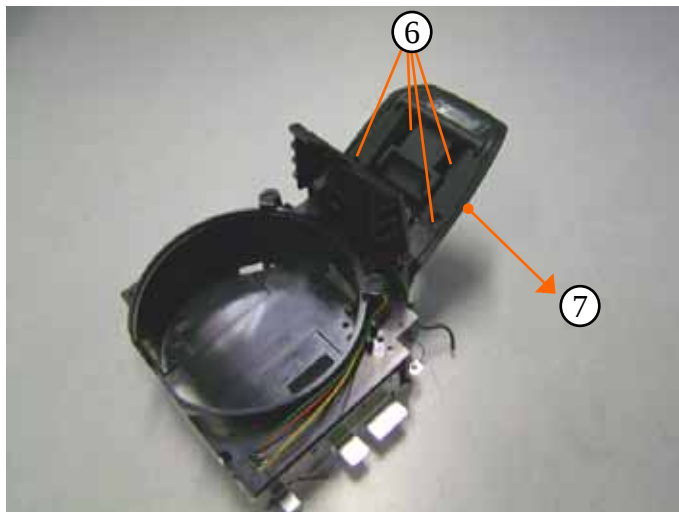
- (1) Remove the 5 screws (BT2M1.7×5.0)
- (2) Remove the 1 screws (MS2M1.7×2.0)



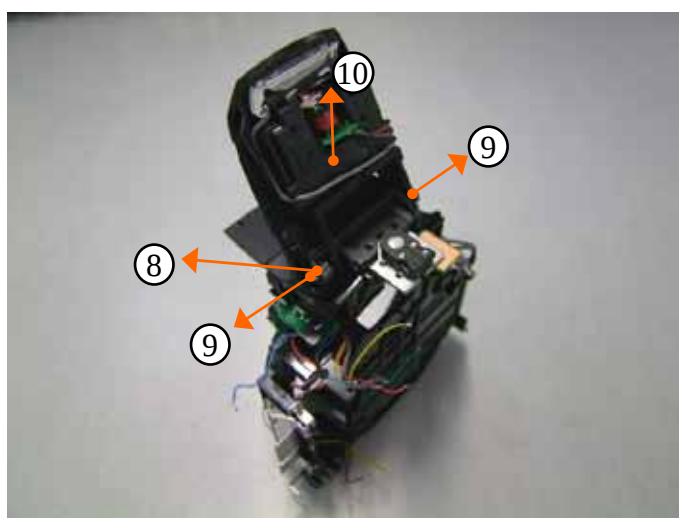
- (3) Remove the 1 screws (BT2M1.7×3.5B)
- (4) Remove CONST HOLDER LENS in the direction of the arrow.
- (5) Remove BUTTON FLASH in the direction of the arrow.



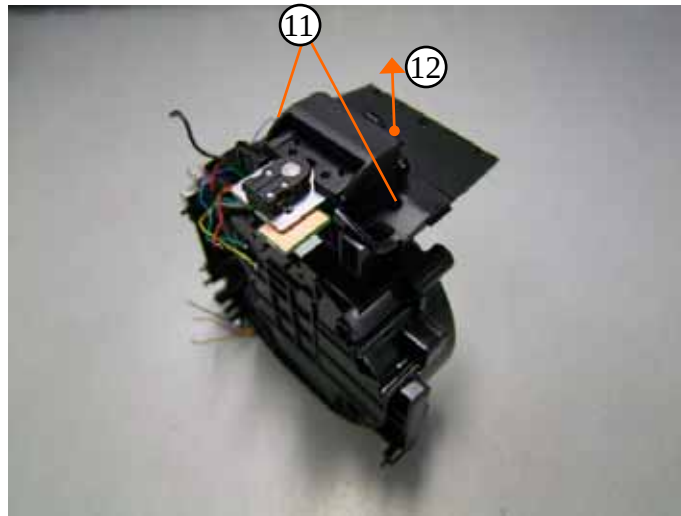
- (6) Remove the 4 screws (BT2M1.7X4.0B)
- (7) Remove COVER FL TOP in the direction of the arrow.



- (8) Remove TSP FLASH in the direction of the arrow.
- (9) Remove SHAFT FLASH in the direction of the arrow.
- (10) Remove CONST FLASH in the direction of the arrow.



- (11) Remove the 2 screws (BT2M1.7×3.5B)
- (12) Remove CONST FL BOTTOM in the direction of the arrow.

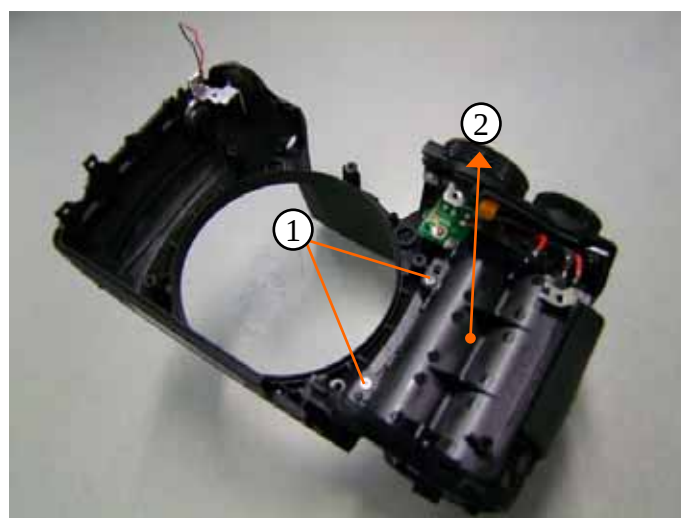


[Assembly]

Assemble by performing the disassembly procedure in reverse.

1-7. Removing the CONST HOLDER BATTERY

- (1) Remove the 2 screws (BT2M1.7×4.0)
- (2) Remove CONST HOLDER BATTERY in the direction of the arrow.

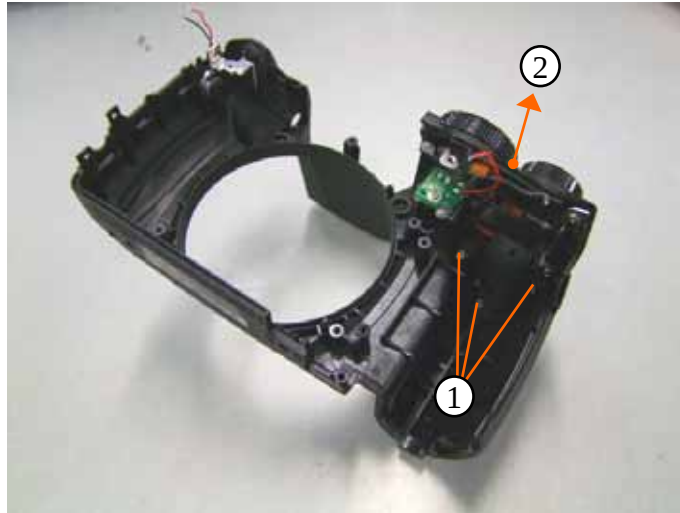


[Assembly]

Assemble by performing the disassembly procedure in reverse.

1-8. Removing the CONST TOP

- (1) Remove the 3 screws (BT2M1.7×4.0)
- (2) Remove CONST TOP in the direction of the arrow.

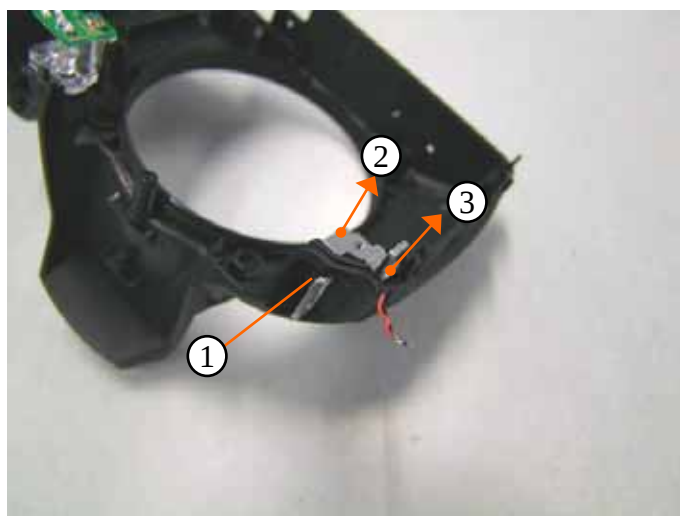


[Assembly]

Assemble by performing the disassembly procedure in reverse.

1-9. Removing the SPEKER

- (1) Remove the 1 screws (MS2M1.7×4.0B)
- (2) Remove STRAP L in the direction of the arrow.
- (3) Remove SPEKER in the direction of the arrow.



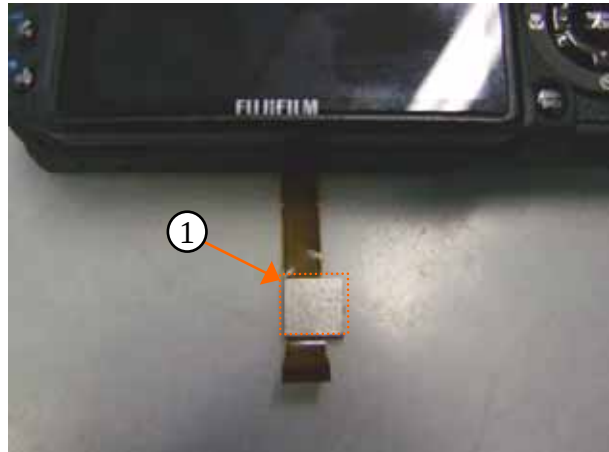
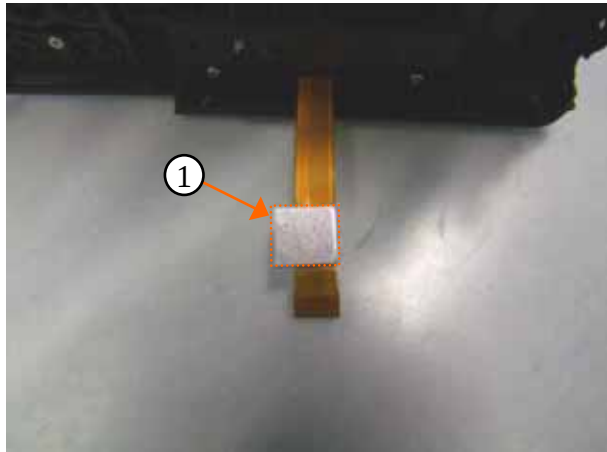
[Assembly]

Assemble by performing the disassembly procedure in reverse.

1-10. Attachment locations for SHEET EMC LCD-T and ULTAPE

1-10-1. Affixing the SHEET EMC LCD-T onto the LCD FPC

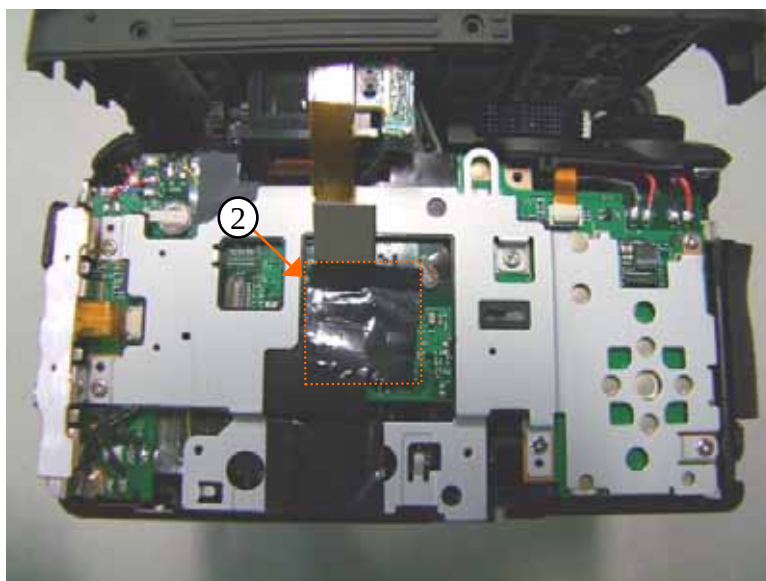
(1) Affix the LCD FPC to the 2 SHEET EMC LCD-T as shown in the figure.



1-10-2. Affixing the UL TAPE onto the LCD FPC

(2) Affix the LCD FPC to the UL TAPE (19×19 mm) as shown in the figure.

UL TAPE: ZS00144-100 (19mm in width)

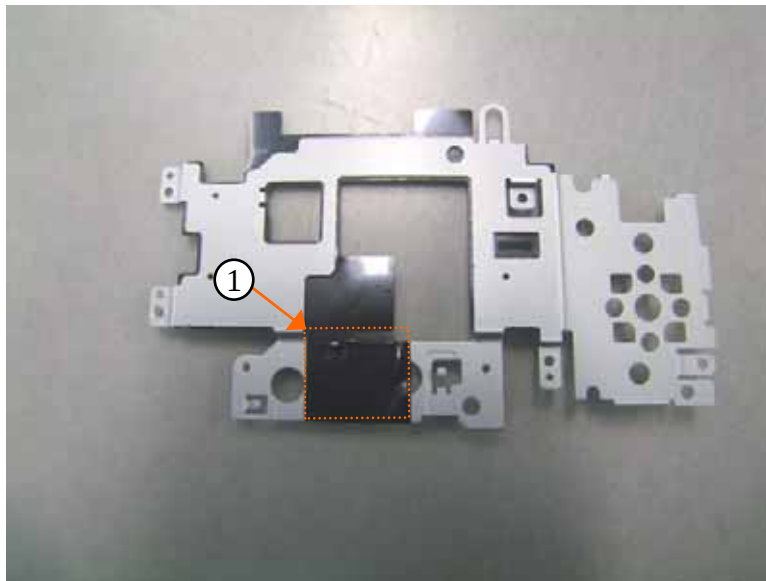


1-11. Attachment locations for UL TAPE , SHEET FRAME MAIN and SHEETLENS FPC

1-11-1. Affixing the UL TAPE onto the FRAME MAIN

(1) Affix the FRAME MAIN to the UL TAPE(19×19 mm) as shown in the figure.

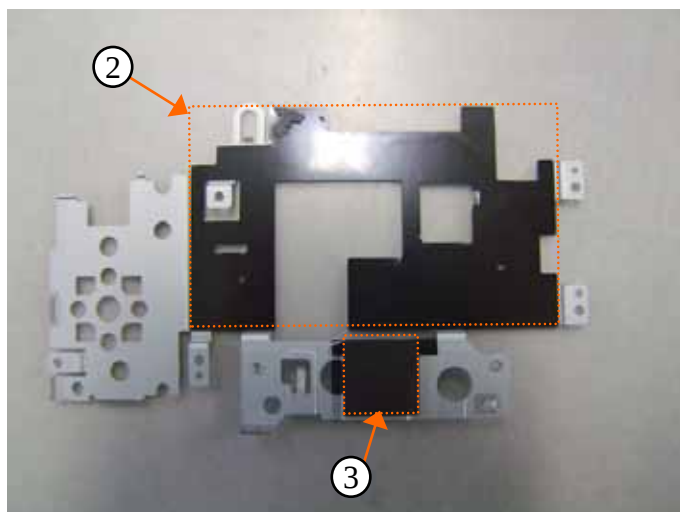
UL TAPE: ZS00144-100 (19mm in width)



1-11-2. Affixing the SHEET FRAME MAIN/SHEETLENS FPC onto the FRAME MAIN

(2) Affix the FRAME MAIN to the SHEET FRAME MAIN as shown in the figure.

(3) Affix the FRAME MAIN to the SHEET LENS FPC as shown in the figure.

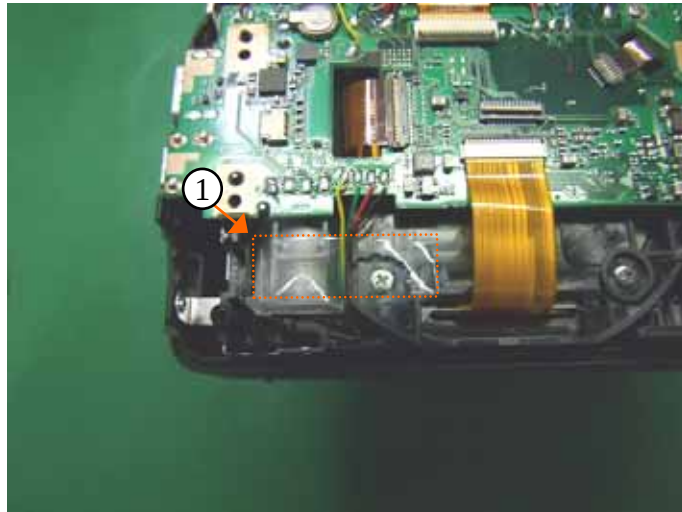


1-12. Attachment locations for UL TAPE and SHEETLENS FPC

1-12-1. Affixing the UL TAPE onto the MAIN PWB

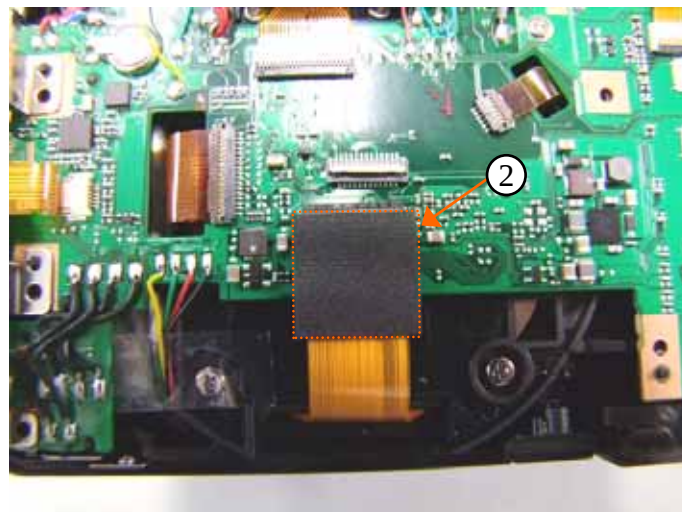
(1) Affix the MAIN PWB to the UL TAPE(9×27 mm) as shown in the figure.

UL TAPE: ZS00144-100 (9mm in width)



1-12-2. Affixing the SHEETLENS FPC onto the MAIN PWB

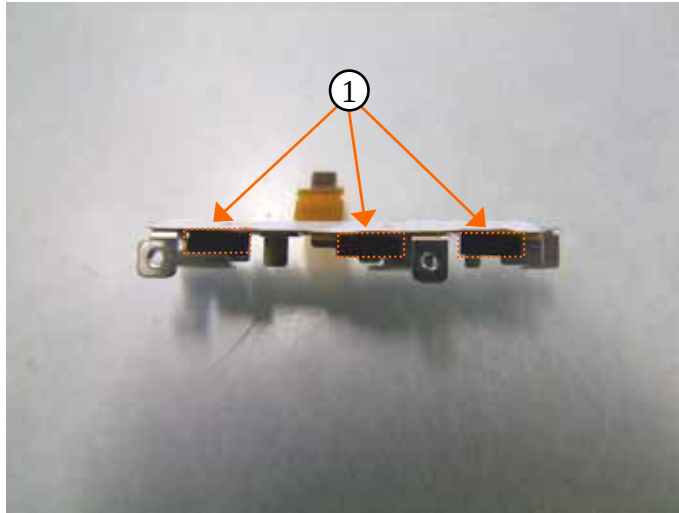
(2) Affix the MAIN PWB to the SHEETLENS FPC as shown in the figure.



1-13. Attachment locations for SHEET PLATE SIDE and TAPE WF PWB SIDE

1-13-1. Affixing the SHEET PLATE SIDE onto the PLATE BUTTON SIDE

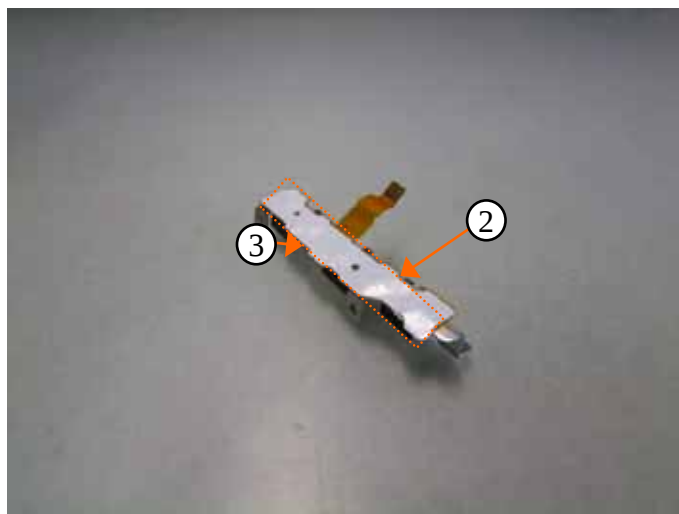
(1) Affix the PLATE BUTTON SIDE to the SHEET PLATE SIDE as shown in the figure.



1-13-2. Affixing the TAPE WF PWB SIDE/CONST SIDE FPC onto the PLATE BUTTON SIDE

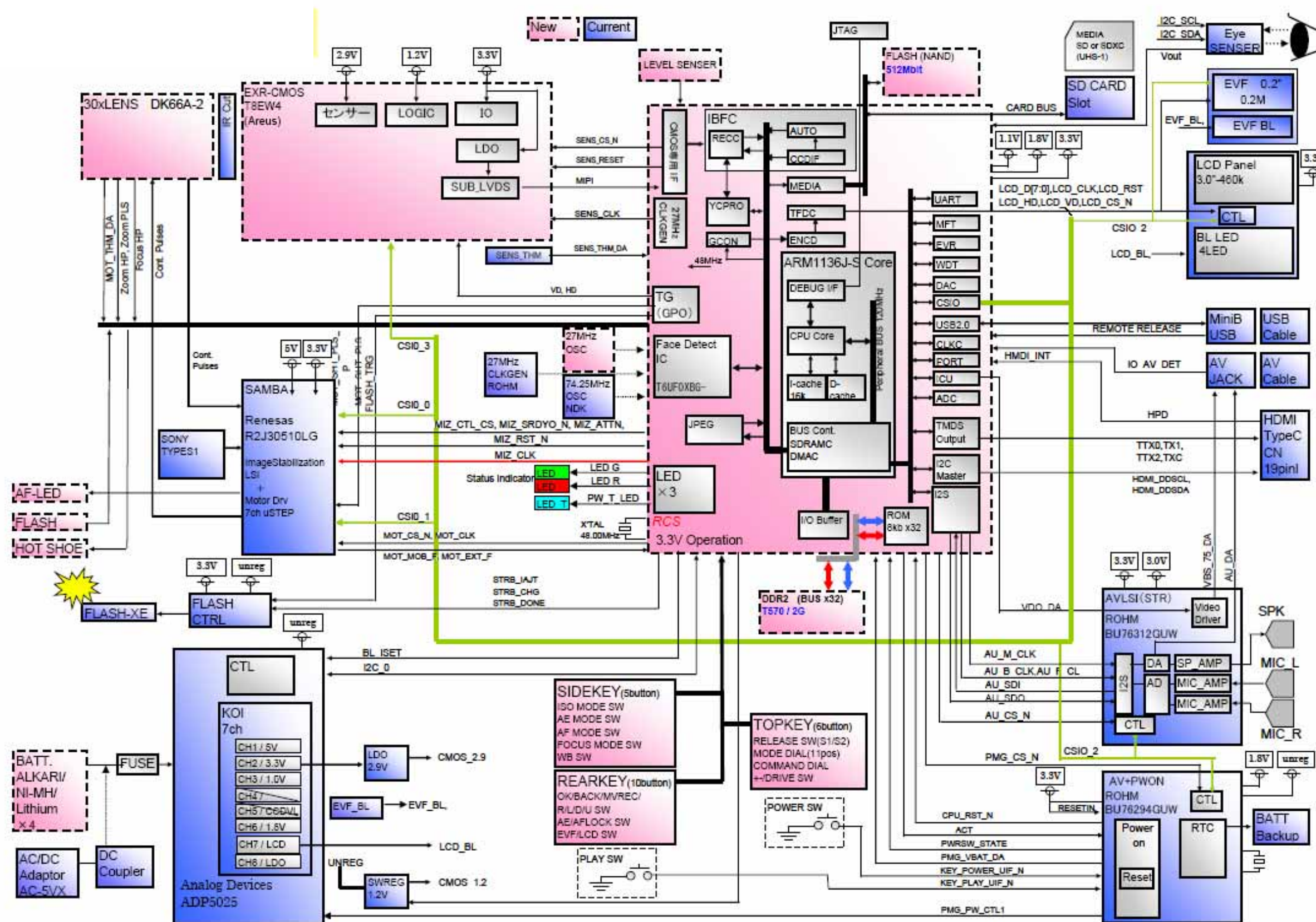
(2) Affix the PLATE BUTTON SIDE to the TAPE WF PWB SID as shown in the figure.

(3) Affix the PLATE BUTTON SIDE to the CONST SIDE FPC as shown in the figure.

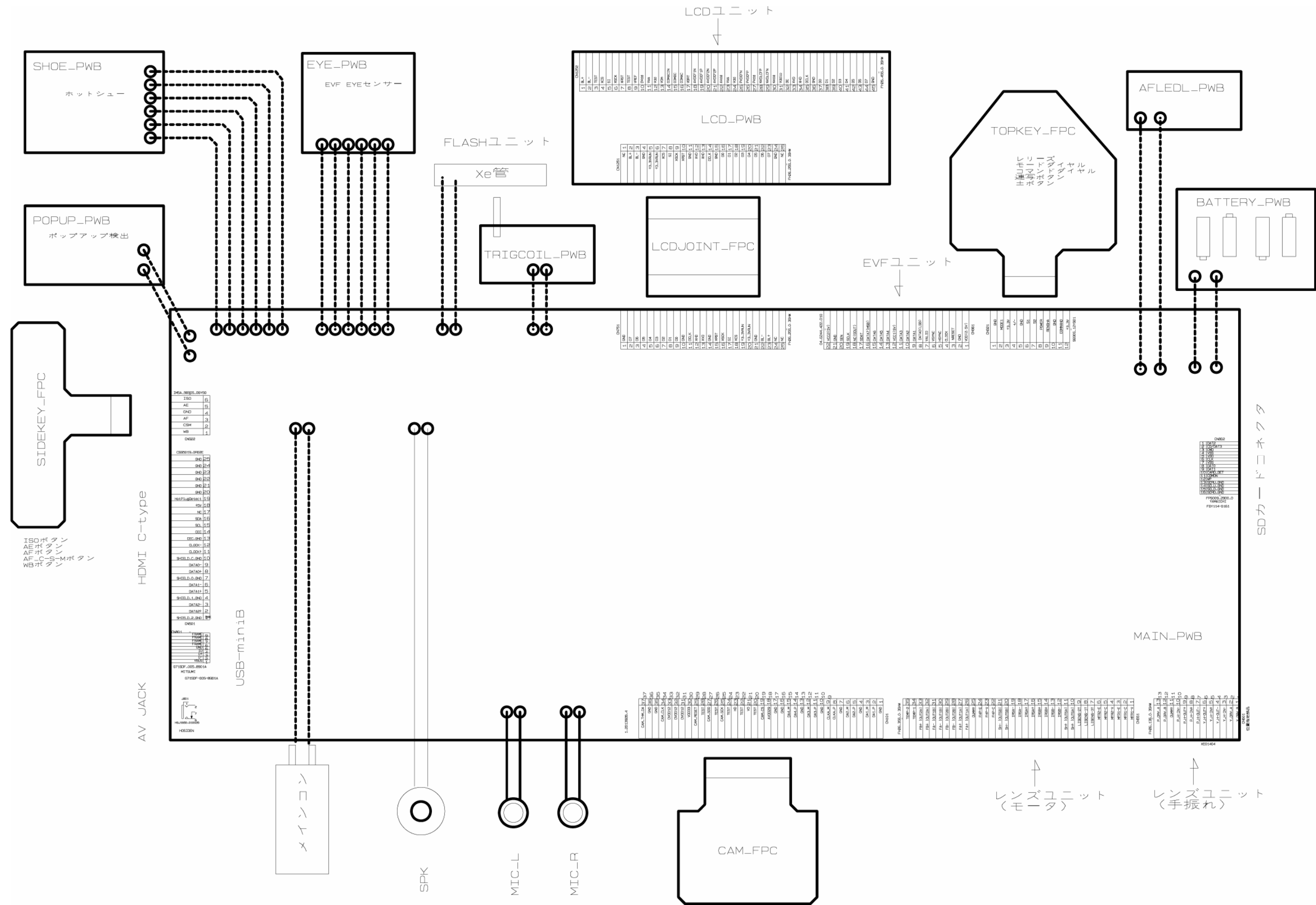


2. Schematics

2-1. Block Diagram



2-2. Overall Connection Diagram



2-3-1. MAIN PWB ASSY



3. Adjustments

3-1. Important point before adjustment

3-1-1. The handling of image files in internal memory

Image files contained in the internal memory should be handled as described below.

<Procedure for handling images>

When either of following work is necessary, as many as possible of the image files should be extracted from the camera's internal memory and then written into the internal memory in the repaired or replacement camera before the camera is returned to the customer.

1. When the replacement camera is provided.

2. When the CONST MAIN is replaced.

--->When "CONST MAIN" is replaced, it is necessary to execute "Flash memory reset".

(When the "Flash memory reset" was executed, involve formatting the internal memory.)

*Note

For PTP-connected cameras, carry out the procedure in "ii. Procedure for PTP-connected cameras and images that cannot be downloaded to a PC".

<Image file transfer procedure>

I. Procedure when images can be downloaded to a PC

* If an memory card is inserted, data in the internal memory cannot be backed up.

(1) Back up the images stored in internal memory.

- Create a folder (named and located so as to avoid any confusion with the user's images).
- Without inserting an memory card, connect the camera to a PC and copy the image files on the removable disk recognized by the PC to the folder created in the previous step.
- Check that the images can be displayed correctly on the PC.

(2) Return the backed up image files from the PC to the camera.

- Turn the camera on without an memory card inserted and format the camera's internal memory.
- Without inserting an memory card, connect the camera to the PC and copy the image files from the folder containing the images backed up in the previous step onto the removable disk recognized by the PC.
- Check that the images can be displayed correctly on the camera.
- Delete the backup files created on the PC in step (1) (the user's image files).

II. Procedure when images cannot be downloaded to a PC

(1) Back up the images stored in internal memory.

- Insert an memory card to be used for image backup into the camera and format the card.
- From the SETUP menu, reset the frame numbers.
- Select image copying from the playback menu, select "Camera -> Card" for all the frames and then copy the images.
- Check that the images can be displayed correctly on the camera.

(2) Return the backed up image files from the memory card to the camera.

- Before inserting the card, format the camera's internal memory.
- Insert the memory card containing the backed up copies of the user's image files.
- From the SETUP menu, reset the frame numbers.
- Select image copying from the playback menu, select "Card -> Camera" for all the frames and then copy the images.
- Remove the memory card and check that the images can be displayed correctly on the camera.
- From the SETUP menu, set the frame numbers to the default sequence.
- If the image file numbers have changed, always notify the user in writing that the image file numbers have changed.

III. Procedure for PTP-connected cameras and images that cannot be downloaded to a PC (Images can only be backed up to a PC. * Normally, back up images using procedure II.)

(1) Back up the images stored in the camera's built-in memory.

- Create an FAIS receive number folder (to ensure error-free user image management).
- Without inserting an memory card, connect the camera to the PC and check the image files in the camera on the PC. Then copy those files to the folder described on the previous page.
- Check that the images can be viewed successfully on the PC.

(2) Return the backup image files from the PC to the camera.

- With no memory card inserted, turn the camera on and format the built-in memory.
- Using a card reader or similar device, check the memory card to be used for image file backup on your PC.
- Copy the image files from the image file backup folder on the previous page into the "DCIM\100_FUJI" folder on the image file backup memory card.
- Using a safe procedure, remove the image file backup memory card from your PC.
- Load the image file backup memory card into the camera.
- Select "Copy image" in the Playback menu, select all the frames in "Card -> Camera" and then copy the images.
- Remove the memory card and check that the images can be viewed successfully.
- Delete the backup files (user image files) created on the PC in step (1).

3-1-2. Adjustment when replacing major parts

<Note>

Depending on the temperature inside the camera (approx. 15°C or below or 50°C or above) a "Temperature NG" error may occur during HS20EXR adjustment.

When a "Temperature NG" error occurs, turn the camera off and leave it for a short time before resuming the adjustments. Check the ambient temperature also as this can influence the procedure.

Adjust the item shown by O in the table below at the part replacement of LENS ASSY, MAIN PWB and CONST FLASH (Other part replacements need not be adjusted).

No.	Adjustment item	Replacing parts	CONST MAIN	LENS ASSY	CONST FLASH
0	MAIN PWB Initialize(BOOT.exe) ¹		O		
1	Lens Data Write		O	O	
2	Level Adjustment(Normal temperature)		O	O	
3	AF Adjustment		O	O	
4	CMOS Defect Correction		O	O	
5	Camera Adjustment		O	O	
6	Level Adjustment(High temperature)		O	O	
7	[IS] Gyro Gain Adjustment		O	O	
8	Battery Voltage Adjustment		O	O	
9	Flash Adjustment		O	O	O
10	Video Adjustment		O		
11	Firmware Download		Do not use it until there is an instruction.		
12	End Setting		Do the end setting when you end the adjustment software when you set the camera to the Jig mode.		

* The firmware is not installed in new CONST MAIN. When Firmware Download is not executed first, it doesn't operate normally. ^{*1}

When the CONST MAIN has been replaced, always reset the MAIN PWB Initialize before making any other adjustments.

3-2. Measuring instruments used

Measuring equipment	Remarks
Regulated power supply	For adjustment
Pattern box	PTB450F
Digital voltmeter	For Battery adjustment
PC	Used for various adjustments and operation checks (PC-AT compatible) OS ^{*1} : Win 2000 SP4, XP SP2 ^{*2}
Brightness meter	LS-110 (Minolta) or equivalent
Color temperature meter	Color Meter IIIF (Minolta) or equivalent
Flash meter	For adjustment and function inspection

*1: PC condition

1. Hardware recommendation: **CPU; Pentium4 2.4GHz** or better, **Available MAIN MEMORY; 512MB** or more. It might make an error of the adjustment when the performance of PC is low.
2. **Video Jig** must be installed.
3. Check that Microsoft .NET Framework Version 2.0 is installed.

*2: To install Microsoft .NET Framework Version 2.0 in Windows 2000 SP4, you must first install Windows Installer 3.0.

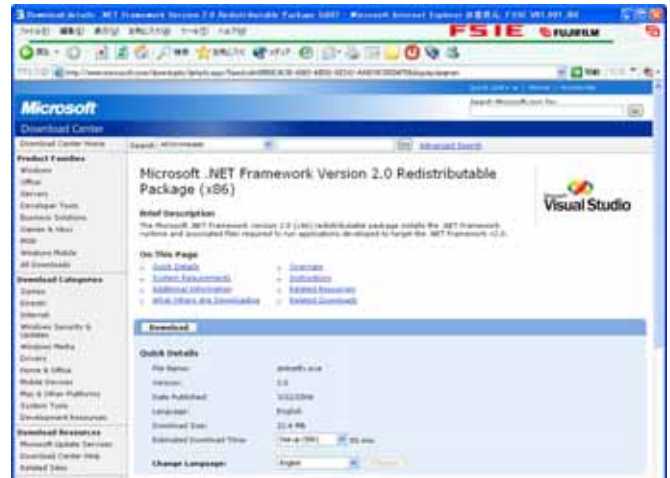
3-2-1. Installing .NetFramework Version 2.0

<Step 1>

Download .NET Framework Version 2.0 from Microsoft.
(See the address below and light picture.)
<http://www.microsoft.com/downloads/details.aspx?familyid=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displaylang=en>

<Step 2>

After downloading the software, complete the installation as directed by the Install wizard.



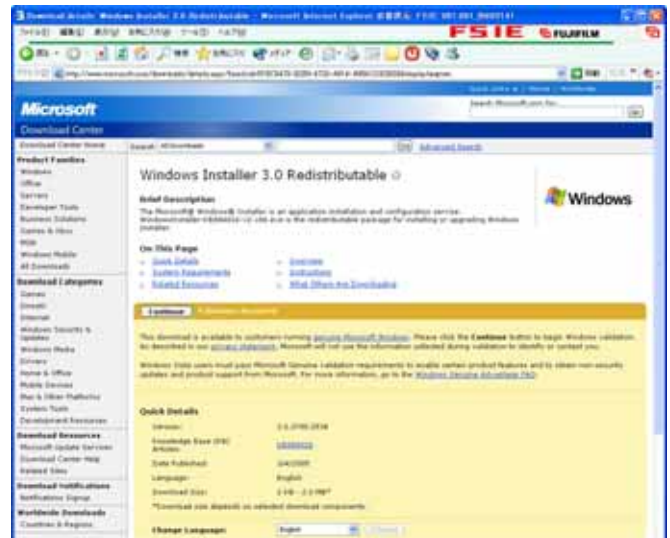
3-2-2. Installing Windows Installer 3.0(Windows 2000 SP4 only)

<Step 1>

Download Windows Installer from Microsoft.
(See the address below and light picture.)
<http://www.microsoft.com/downloads/details.aspx?familyid=5FBC5470-B259-4733-A914-A956122E08E8&displaylang=en>

<Step 2>

After downloading the software, complete the installation as directed by the Install wizard.





3-3. Use jig list

Pats. No	Name	Comment	Remarks
ZJ00699-100	Filter LB145	Camera adjustment	Common with the 8mmVTR/ FinePix F700
ZJ00008-100	Lens holder	AF adjustment	Common with the 8mmVTR/MX600
ZJ00009-100	Stand	AF adjustment	Common with the 8mmVTR/MX600
ZJ00254-100	Gray Chart (Reflective type)	Flash adjustment	Common with the MX700/MX500
ZJ00611-100	X-Y stage for AF adjustment	AF adjustment	Common with the FinePix F700
ZJ00583-100	Screw Driver (D3LUF88G (2X20))	General repair	Common with the FinePix F402
ZJ00653-100	LB145 filter holder kit for X-Y stage	Camera adjustment	Common with the FinePix F700
ZJ00650-100	Video adjustment jig	Video adjustment	Common with the FinePix A310
ZJ00982-100	Multi cable(AV/USB) for F30	Video adjustment	Common with the FinePix F30
ZJ00581-100	Discharger	Discharge for FLASH UNIT	
FZ00330-200	AC Cable (For US/JP)	AF adjustment	Use it with ZJ00682-100 and a set ^{*2}
FZ03982-100	AC Cable (For EG)	AF adjustment	Use it with ZJ00682-100 and a set ^{*2}
FZ03983-100	AC Cable (For EU)	AF adjustment	Use it with ZJ00682-100 and a set ^{*2}
---	AC Adapter(AC-5V)	General adjustment	Accessory sold in the market
ZJ01113-100	LED Chart (IS)	[IS] Gyro Gain Adjustment	Common with the FinePix F50fd
ZJ01108-100	Vibration generator	[IS] Gyro Gain Adjustment	Common with the FinePix F50fd (Eccentric axis type A: With ZJ01122-100 as set) Separate AC cable
ZJ01118-100	45 degree adaptor	[IS] Gyro Gain Adjustment	Common with the FinePix F50fd
ZJ01120-100	Eccentric axis type B (0.14)	[IS] Gyro Gain Adjustment	Common with the FinePix J250
ZJ01119-100	Filter holder	[IS] Gyro Gain Adjustment	Common with the FinePix F50fd
ZJ01123-100	ND Filter 75mm size Concentration 0.5	[IS] Gyro Gain Adjustment * Will be provided as required.	Common with the FinePix F50fd
ZJ01124-100	ND Filter 75mm size Concentration 1.0	[IS] Gyro Gain Adjustment * Will be provided as required.	Common with the FinePix F50fd
ZJ01125-100	ND Filter 75mm size Concentration 1.5	[IS] Gyro Gain Adjustment * Will be provided as required.	Common with the FinePix F50fd
ZJ01126-100	ND Filter 75mm size Concentration 2.0	[IS] Gyro Gain Adjustment * Will be provided as required.	Common with the FinePix F50fd
ZJ01134-100	QR Cord reader	LENS DATA Read	Common with the FinePix S8000fd
ZJ01855-100	CP-04 Battery jig	General adjustment	New jig
ZJ00580-100	Power Cable Jig (5V)	General adjustment	Common with the FinePix S304
CR0130900U9	DC COUPLER CP-04	General adjustment	Common with the FinePix S2500HD
ZJ01850-100	FxHS20EXR W PC Soft Ver.1.00	PC adjustment	Windows 2000 / XP English OS ^{*1}
ZJ01851-100	FxHS20EXR SD BOOT Soft	[I] Main PWB Initialize	New jig ^{*1}
ZJ01860-100	AF Chart_1	AF adjustment	New jig ^{*1}
ZJ01861-100	AF Chart_2	AF adjustment	New jig ^{*1}
ZJ00287-100	900mm conversion lens	AF adjustment	Common with the FinePix S7000
ZJ01854-100	HS20ADP for Vibration generator	[IS] Gyro Gain Adjustment	New jig
ZJ01849-100	FxHS20EXR/X100 Level chart	Level adjustment	New jig
ZJ01859-100	FxHS20EXR Level jig	Level adjustment	New jig
ZJ01858-100	Rotation axis Stand	Level adjustment	New jig
ZJ01862-100	LENS data for FxHS20EXR	Lens Data Write	New jig
---	Laser telemeter	Level adjustment	New jig ^{*3} Maker : Makita, Model : SK308PZ When it's following specification equal to "SK308PZ", the Laser telemeter container is practicable. ·Precision : $\pm 1\text{mm}/10\text{m}$ ·Line Point laser : X direction/Y direction

*1: Please downloaded from Web server (https://denhin.fujifilm.co.jp/csg_en/index.htm or <http://fujifilm-di.intranets.com/>).

*2: Select one the power cable suitable each country.

*3: Marketing product. Please purchase it in a general merchandising store.

3-4. Calibration method of pattern box

<Use the pattern box for Camera adjustment>

Turn on the power supply in the pattern box.

Afterwards, wait for about ten minutes so that the source of light may stabilize.

(1) Brightness

160 ± 5cd/m² (with LB145 filter)

No chart, center of pattern box

Minolta brightness meter LS-110 or equivalent

* Calibration method

Place the filter (LB145) against the pattern box. With the filter (LB145) in contact with the brightness meter, adjust the pattern box brightness to 160 ± 5cd/m².

(2) Color temperature

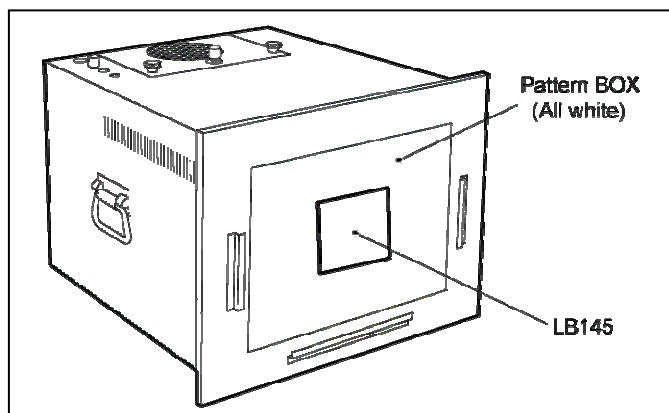
6100 ± 50K (with LB145 filter)

No chart, center of pattern box

Minolta color meter IIIIF or equivalent

* Calibration method

Place the filter (LB145) against the pattern box. With the filter (LB145) in contact with the color temperature meter, adjust the pattern box color temperature to 6100 ± 50K.



Calibration method of pattern box

3-5. Adjustment software installation

3-5-1. Installation of DSC jig driver

* Since this camera uses the USB for communications with the personal computer, in order to start the PC adjustment software, [the DSC jig driver] needs to be installed in the personal computer beforehand.

* The DSC jig driver is the same as that for the FinePix S7000, so if this jig driver software is already installed in the personal computer, it is not necessary to install it. The procedure is given below.

<Step 1>

DSC jig driver (ZJ00684-100.ZIP) is downloaded from Web server (https://denhin.fujifilm.co.jp/csg_en/Adjustment.htm).

<Step 2>

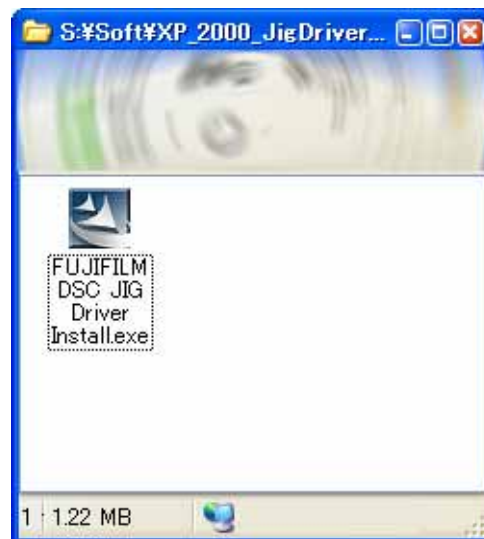
Defrost the downloaded compression software

<Step 3>

Double-click setup.exe in the folder of defrosted ZJ00684-100 and install Fuji FILM DSC Jig Driver as follows.

<Step 4>

Install the software in [C:\ProgramFiles\Fjig] according to the instructions on the PC's screen.



3-5-2. Various downloading software decompressions, preservation methods, and notes

The PC adjustment softwares are in a specified Web server, and both of these are the compression of ZIP form files. Therefore, after downloading these compression files from the Web server, the decompression of the file is necessary. In the decompression software, if the decompression of the ZIP form can be done, any software is OK.

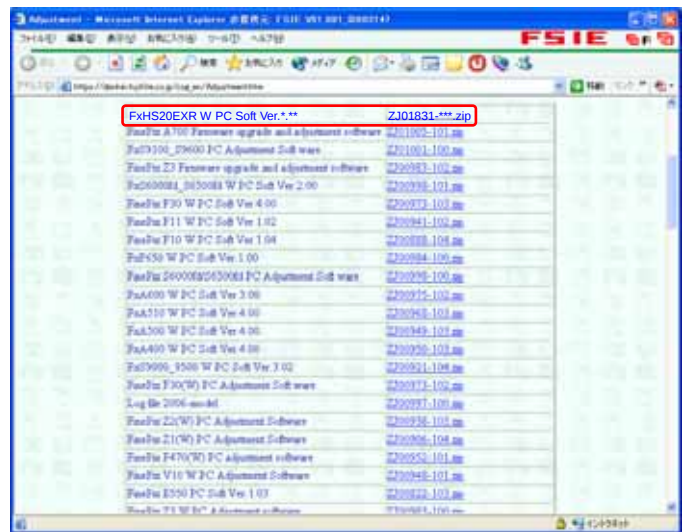
(Please prepare each one for the decompression software.)
The decompression and the preservation method of the PC adjustment software and the firmware are described to the following.

* The PC adjustment soft decompression and preservation method

<Step1>

The adjustment software is downloaded from WEB, and software is installed in the PC.

We have uploaded the **"PC Adjustment Software (ZJ01831-***.zip) for FxHS20EXR_W"** on our website: (https://denhin.fujifilm.co.jp/csg_en/index.htm).



<Step2>

"ZJ01831-***" is a compression of "ZIP type" file.

The **"FxHS20EXR_W"** folder can be done by extracting it by "Compression software".

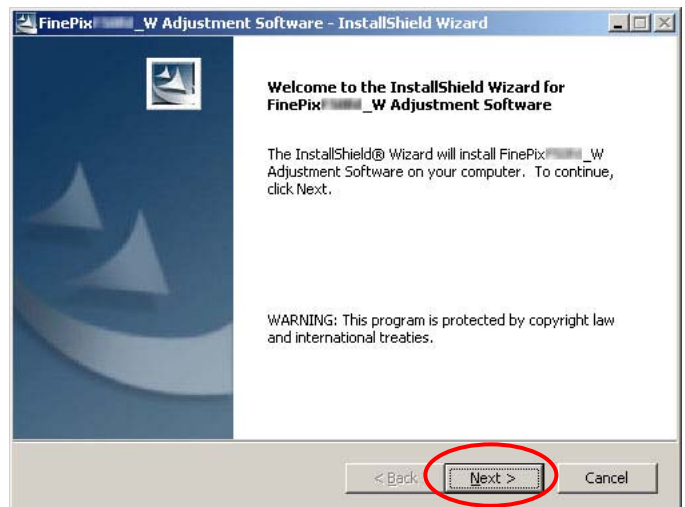
Copy the **"FxHS20EXR_W"** folder to the "C" drive on the Adjustment PC.

<Step 3>

Double-click the "Setup_FinePixHS20EXR_W_***.exe" adjustment software installer file contained in the expanded ZJ01831-*** folder.

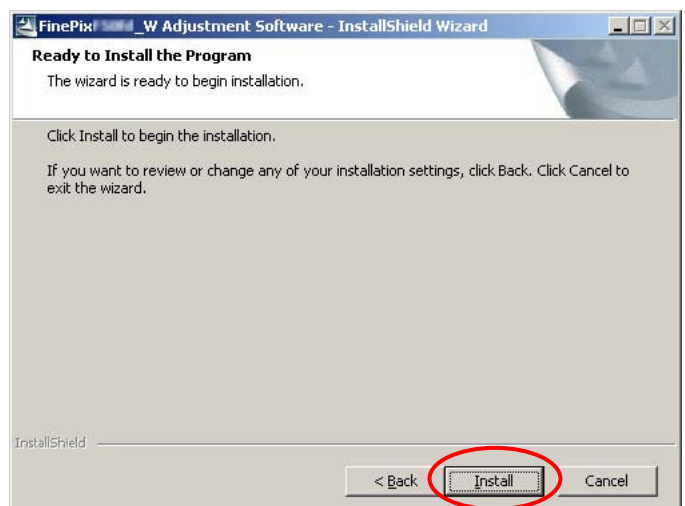
<Step 4>

When the window shown on the right appears, click [Next].



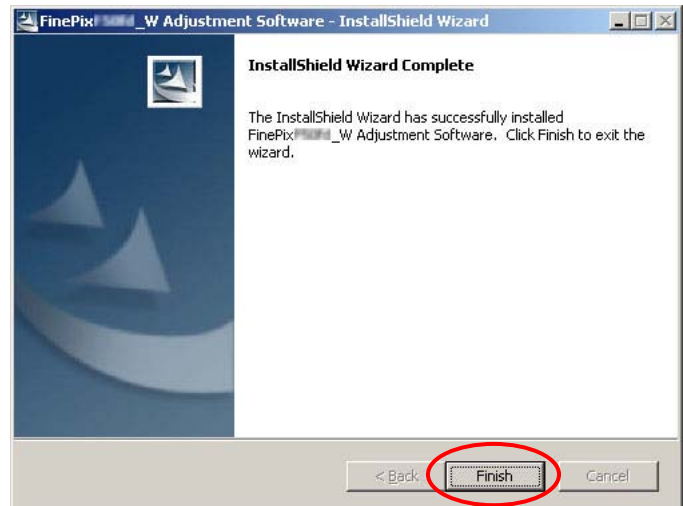
<Step 5>

When the window shown on the right appears, click [Install]. (Installation then begins.)



<Step 6>

When installation ends and the window shown on the right appears, click [Finish].



3-5-3. Uninstalling FxHS20EXR W PC Soft Ver.*.**

<Step 1>

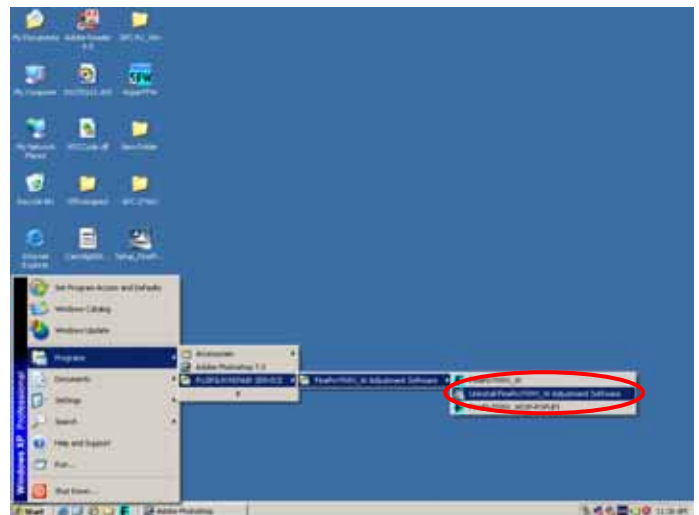
Click : Start

↓
Programs

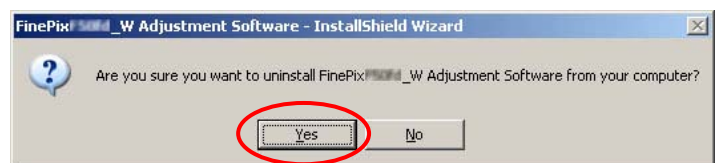
↓
FUJIFILM REPAIR SERVICE

↓
FinePixHS20EXR_W Adjustment Software

↓
Uninstall FinePixHS20EXR_W Adjustment Software

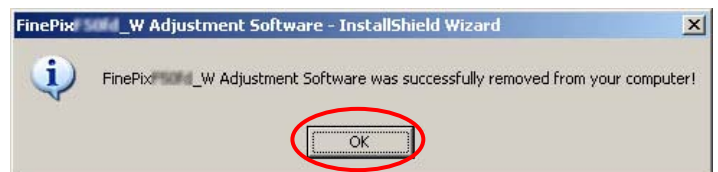
**<Step 2>**

When the window shown on the right appears, click [Yes].
(Uninstallation then begins.)

**<Step 3>**

When uninstallation ends and the window shown on the right appears, click [OK].

* In some cases, uninstalling the software does not remove all the files. To completely remove all the files, delete the C:\FinePixHS20EXR_W folder after completing the uninstallation.



3-5-4. FxHS20EXR SD BOOT card making

The SD BOOT softwares are in a specified Web server, and both of these are the compression of ZIP form files.

Therefore, after downloading these compression files from the Web server, the decompression of the file is necessary. In the decompression software, if the decompression of the ZIP form can be done, any software is OK.

(Please prepare each one for the decompression software.) The decompression and the preservation method of the PC adjustment software and the firmware are described to the following.

* The PC adjustment soft decompression and preservation method

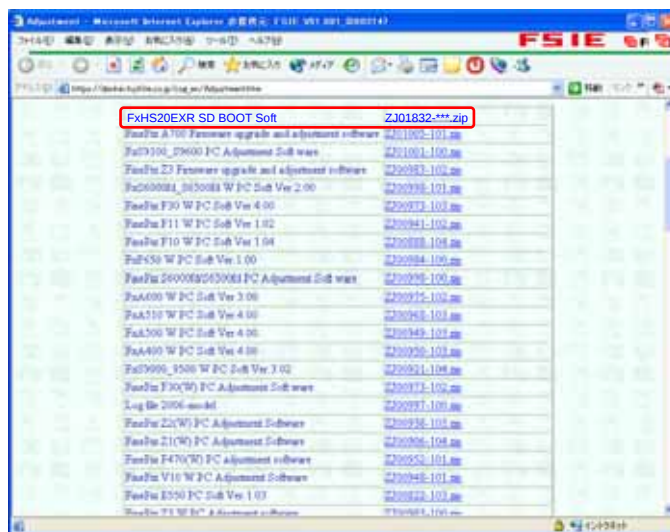
<Step1>

Do format of SD card in a "FAT32" form.

<Step2>

The SD BOOT software is downloaded from WEB.

We have uploaded the "**SD BOOT Software (ZJ01832-***.zip) for FxHS20EXR**" on our website: (https://denhin.fujifilm.co.jp/csg_en/index.htm).



<Step3>

"ZJ01832-***" is a compression of "ZIP type" file.

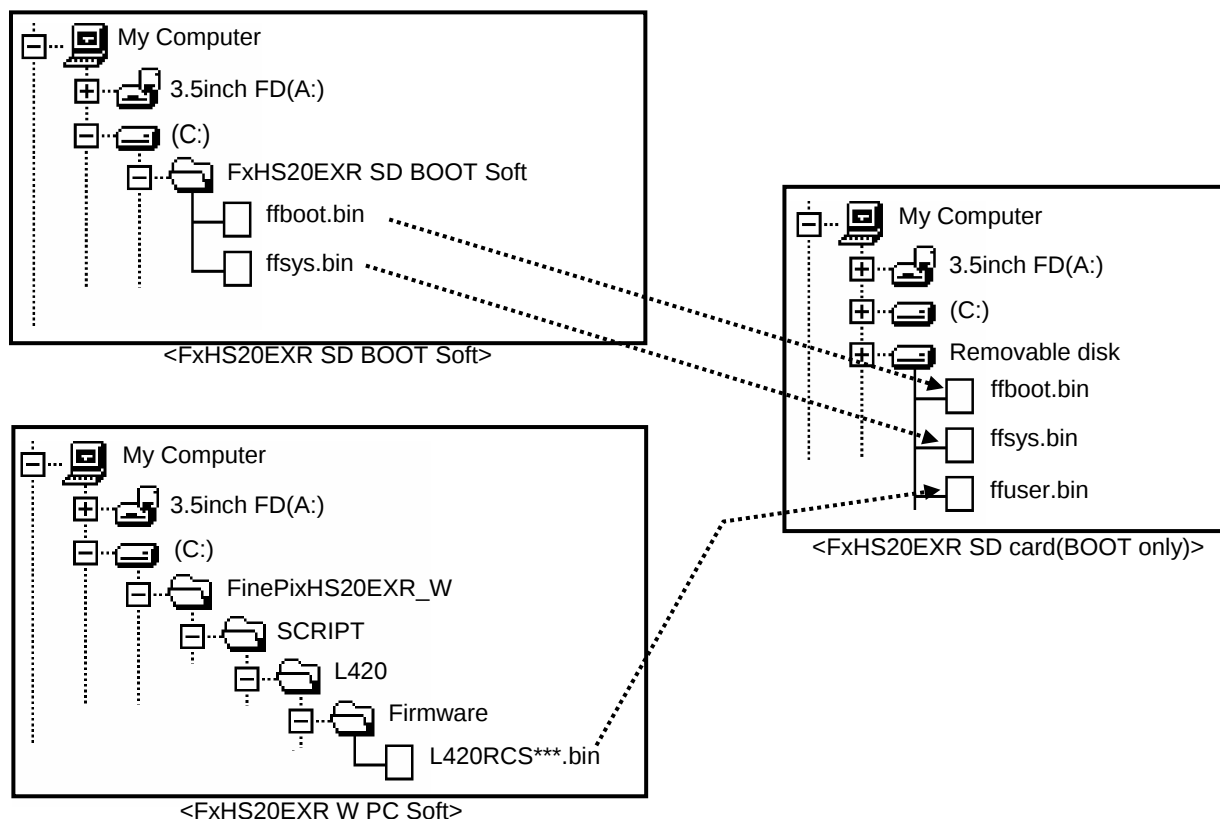
The "FxHS20EXR SD BOOT Soft" folder can be done by extracting it by "Compression software".

Copy the "FxHS20EXR SD BOOT Soft" folder to the "C" drive on the Adjustment PC.

<Step4>

Copy the "ffboot.bin" file and "ffsys.bin" file, which are stored in the extracted "FxHS20EXR SD BOOT Soft" folder, under SD card.

Copy the "L420RCS***.bin" file, which are stored in the extracted "FinePixHS20EXR_W\SCRIPT\L420\Firmware" folder, rename to "ffuser.bin" under SD card.



3-6. QR Code reader (ZJ01134-100) Setup

Initialize the QR code reader used to carry out the LENS DATA read.

1. Connect the QR code reader to the USB port on the PC.
2. Wait until the PC recognizes the QR code reader (the QR code reader emits a beep).
3. Use the QR code reader to scan in the "Add CR Suffix" provided in "Suffix Selection" in the instruction manual supplied with the QR code reader.
4. Scanning method
 - (1) Hold the "Add CR Suffix" bar code so that it is lit by the aiming beam of the QR code reader (at a distance of around 5 cm).
 - (2) Press the switch on the QR code reader.

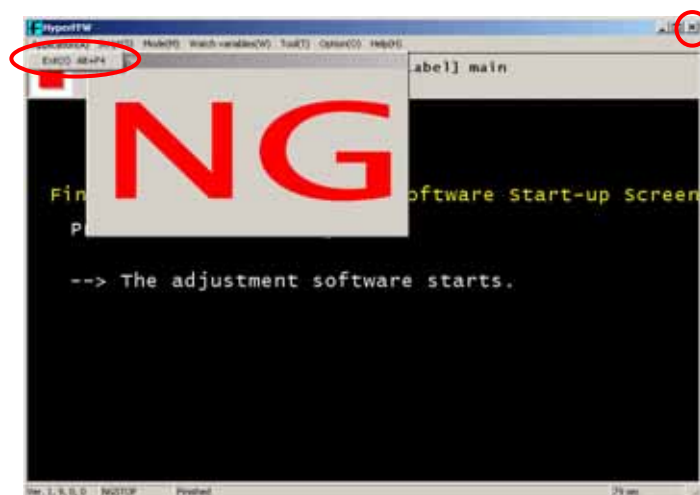
* The instruction manual is provided in several languages.
 Use the section provided in any language for the setting.
 * Refer to the instruction manual for detailed information on using the QR code reader.



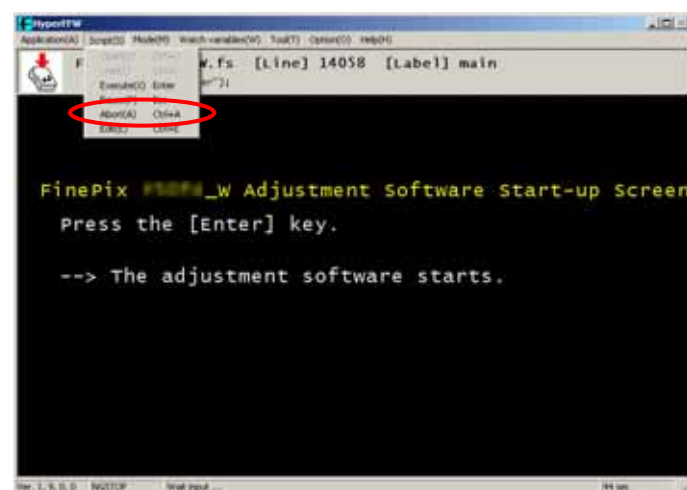
3-7. Using the Adjustment Software

Menu	Command	Details
Application	Exit (Alt+F4)	Terminate HyperFFW
Script	Open	Do not use
	Load	Do not use
	Execute	Do not use
	Pause	Do not use
	About (Ctrl+A)	Cancels execution
	Edit	Do not use
Mode	Do not use	
Watch variables	Do not use	
Tool	Do not use	
Option	Do not use	
Help	Do not use	

It is only possible to exit HyperFFW when the "x" circled in red can be clicked.



To exit HyperFFW during the adjustment, select About (Ctrl+A) and then select Exit (Alt+F4).



3-8. Launching the Adjustment Software

3-8-1. Launching the Adjustment Software when MAIN PWB Initialize

<Step 1>

Start

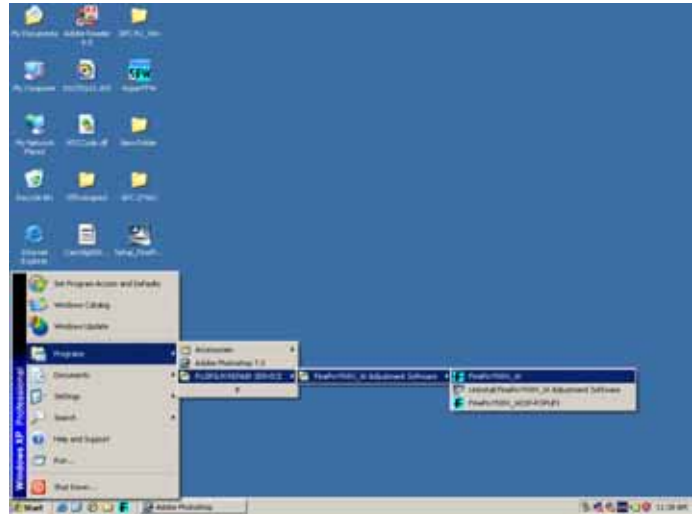
↓
Programs

↓
FUJIFILM REPAIR SERVICE

↓
FinePixHS20EXR_W Adjustment Software

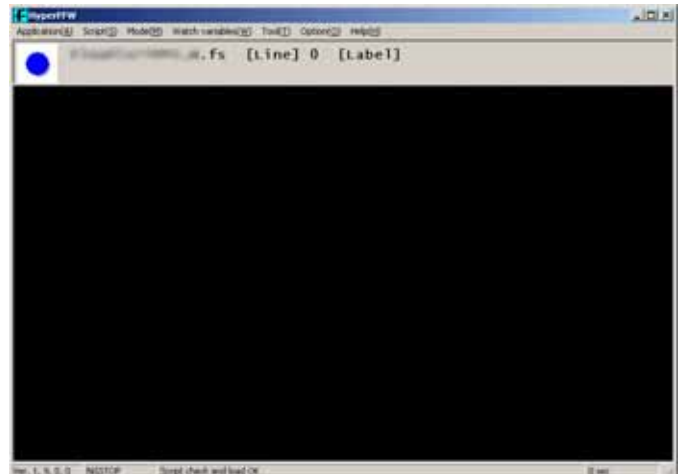
↓
FinePixHS20EXR_W (BOOT)

The adjustments are the same whichever option is selected.



<Step 2>

If adjustment stops at the window shown on the right, press the [Enter] key to proceed.



<Step 3>

[Repair site ID input]

The first time the adjustment software is launched, a window appears where you select the repair site ID recorded in the camera during End Setting.

In this window, select the appropriate repair site.

E.g.: USA -> Press "A" on the keyboard.

* Once this has been set, this window no longer appears on the PC.

* To reset the repair site ID, exit the adjustment software and then delete C:\FinePixHS20EXR_W\base.txt.

Repair site ID input.

0: SAPPORO	A: USA	F: BRITAIN	Z: OTHERS
2: KURIHARA	B: CANADA	G: GERMANY	
3: TOKYO	C: HAWAII	H: FRANCE	
5: OSAKA		I: SPAIN	
	D: TAIWAN	J: ITALY	
8: FUKUOKA	T: CHINA	K: NETHERLANDS	
	Q: SINGAPORE	L: BELGIUM	
		M: SWEDEN	
		N: SWITZERLAND	
		O: NORWAY	
		P: FINLAND	

<Step 4>

[Adjustment Software Start-up Screen]

Check the details and then press the [Enter] key to proceed.

FinePix HS20EXR_W Adjustment Software Start-up Screen.

Press the [Enter] key.

----> The adjustment software starts.

<Step 5>

[Notes on using the adjustment software]

1. Check the adjustment sequence needed when parts are replaced.
2. When the CONST MAIN has been replaced, carry out the "MAIN PWB Initialize [I]" procedure before starting the adjustment.
3. If you have used the adjustment software, always carry out End Setting.
4. Refer to the Service Manual for precautions and other detailed information on adjustment.

Check the details and then press the [Enter] key to proceed.

Cautions When Using the FinePix HS20EXR_W Adjustment Software

1. Adjust as follows after replacing parts.

[F1]Battery [F4]CMOS Data [F5]Camera [F6]AF [F7]Flash
[F8]Firmware Download [F9]LensData [F11]Video [F12]End Setting [G]IS Gyro
[L]Level(Normal temperature) [H]Level(High temperature) [I]MAIN PWB Initialize

Replaced Parts	Adjustment Procedure
MAIN PWB	: [I]->[F9]->[L]->[F6]->[F4]->[F5]->[H]->[G]->[F1]->[F7]->[F11]->[F12]
LENS CONST	: [F9]->[L]->[F6]->[F4]->[F5]->[H]->[G]->[F1]->[F7]->[F12]
FLASH	: [F7]->[F12]

2. When the MAIN PWB ASSY has been replaced, always
MAIN PWB ASSY Initialize before making any other adjustments.
3. Always run End Setting after using this adjustment software.
4. Proceed with adjustment after reading the cautions here,
and the relevant cautions noted in the Service Manual.
Press the [Enter] key to proceed to the Jig Mode Setup screen.

<Step 6>

[BOOT Mode Setup Screen]

For other adjustments, use the "DC COUPLER CP-04" and supply power from the AC adapter (5V).

1. Set the camera mode to AUTO.
2. Connect the camera to the PC using the USB cable.
3. Supply power to the camera.
4. Turn the camera on while holding down the shutter button and up key(I).
5. Check that the LED is lit green.

After completing steps 1 to 5, press the [Enter] key to proceed.

FinePix HS20EXR BOOT Mode Setup Screen

Set the BOOT mode by using [DC COUPLER CP-04 (AC Adapter (5.0V))]

- 1) Set the mode to the Photography mode(AUTO).
- 2) Connect the [USB cable].
- 3) Supply power to the camera.
- 4) Switch camera power ON while pressing the shutter button and up key.
- 5) Ensure that the LED is lit.

When steps 1 to 5 are complete, press the [Enter] key on the PC.

<Step 7>

[MAIN PWB Initialize Screen]

- (1) Pressing the [X]:Restart key interrupts the adjustment software and returns you to the [Adjustment Software Start-up Screen].
However, the camera will not be recognized as a PTP or Mass Storage device.
(Press the [X] key while the camera is in communication with the PC. If you press the [X] key while the camera is disconnected, the [Adjustment Software Start-up Screen] may be slow to reappear and an error may appear in the adjustment software.)

FinePix HS20EXR_W Initialize Screen

[I] : MAIN PWB Initialize
*Only use for when the MAIN PWB has been replaced.

[X] : Restart

3-8-2. Launching the Adjustment Software other than [I]:MAIN PWB Initialize

[Adjustment environment and precautions]

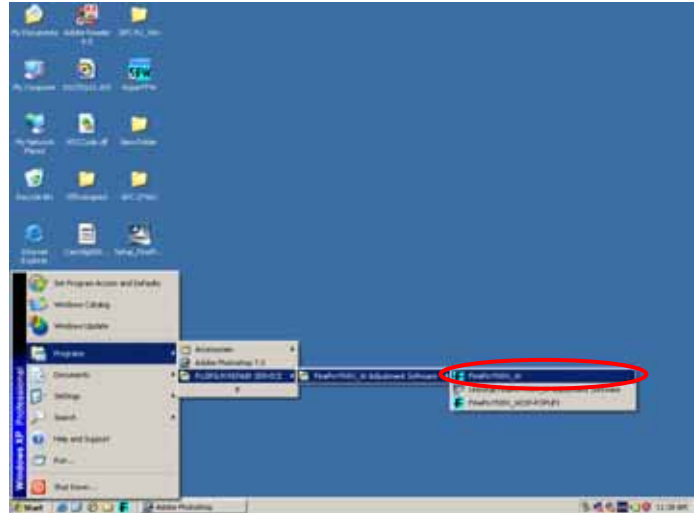
- When "OK" and "NG" window is displayed and adjusts the same camera again, switch camera power off once, and please switch camera power on with a jig mode again.

<Step 1>

Click : Start

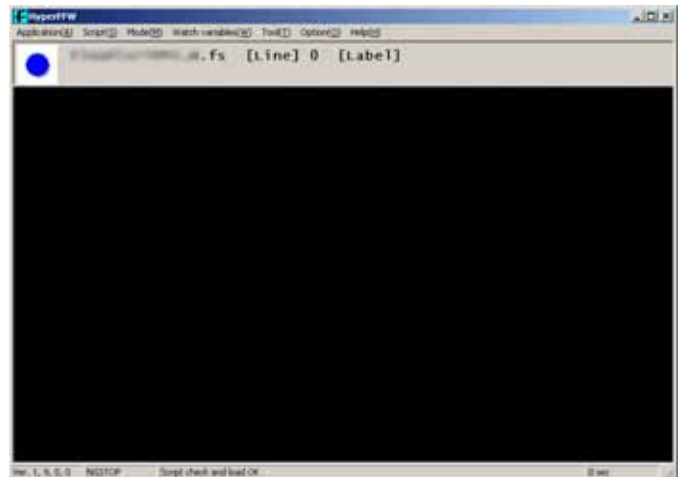
↓
Programs↓
FUJIFILM REPAIR SERVICE↓
FinePixHS20EXR_W Adjustment Software↓
FinePixHS20EXR_W

The adjustments are the same whichever option is selected.



<Step 2>

If adjustment stops at the window shown on the right, press the [Enter] key to proceed.



<Step 3>

[Repair site ID input]

The first time the adjustment software is launched, a window appears where you select the repair site ID recorded in the camera during End Setting.

In this window, select the appropriate repair site.
E.g.: USA -> Press "A" on the keyboard.

- * Once this has been set, this window no longer appears on the PC.
- * To reset the repair site ID, exit the adjustment software and then delete C:\FinePixHS20EXR_W\base.txt.

Repair site ID input

0: SAPPORO	A: USA	F: BRITAIN	Z: OTHERS
2: KURIHARA	B: CANADA	G: GERMANY	
3: TOKYO	C: HAWAII	H: FRANCE	
5: OSAKA		I: SPAIN	
	D: TAIWAN	J: ITALY	
8: FUKUOKA	T: CHINA	K: NETHERLANDS	
	Q: SINGAPORE	L: BELGIUM	
		M: SWEDEN	
		N: SWITZERLAND	
		O: NORWAY	
		P: FINLAND	

<Step 4>

[Adjustment Software Start-up Screen]

Check the details and then press the [Enter] key to proceed.

FinePix HS20EXR_W Adjustment Software Start-up Screen

Press the [Enter] key.

----> The adjustment software starts.

<Step 5>

[Notes on using the adjustment software]

1. Check the adjustment sequence needed when parts are replaced.
2. When the CONST MAIN has been replaced, carry out the "MAIN PWB Initialize [I]" procedure before starting the adjustment.
3. If you have used the adjustment software, always carry out End Setting.
4. Refer to the Service Manual for precautions and other detailed information on adjustment.

Check the details and then press the [Enter] key to proceed.

Cautions When Using the FinePix HS20EXR_W Adjustment Software

1. Adjust as follows after replacing parts.

[F1]Battery [F4]CMOS Data [F5]Camera [F6]AF [F7]Flash
[F8]Firmware Download [F9]LensData [F11]Video [F12]End Setting [G]IS Gyro
[L]Level(Normal temperature) [H]Level(High temperature) [I]MAIN PWB Initialize

Replaced Parts	Adjustment Procedure
MAIN PWB	: [I]->[F9]->[L]->[F6]->[F4]->[F5]->[H]->[G]->[F1]->[F7] ->[F11]->[F12]
LENS CONST	: [F9]->[L]->[F6]->[F4]->[F5]->[H]->[G]->[F1]->[F7]->[F12]
FLASH	: [F7]->[F12]

2. When the MAIN PWB ASSY has been replaced, always MAIN PWB ASSY Initialize before making any other adjustments.
 3. Always run End Setting after using this adjustment software.
 4. Proceed with adjustment after reading the cautions here, and the relevant cautions noted in the Service Manual.
- Press the [Enter] key to proceed to the Jig Mode Setup screen.

<Step 6>

[Jig Mode Setup Screen]

- (1) When carrying out Battery Voltage Adjustment, use the "CP-04 Battery jig" and a regulated power supply set to 4.8 V.
- (2) For other adjustments, use the "DC COUPLER CP-04" and supply power from the AC adapter (5V).

1. Set the camera mode to AUTO.
2. Connect the camera to the PC using the USB cable.
3. Use the appropriate jig according to the adjustment options to supply power.
4. Turn the camera on while holding down the shutter button and up key(I).
5. Check that the LED is lit green.

After completing steps 1 to 5, press the [Enter] key to proceed.

FinePix HS20EXR Jig Mode Setup Screen

- (1) Set the Jig mode by using [CP-04 Battery jig (4.8V)] at Battery Voltage Adjustment.
- (2) Set the Jig mode by using [DC COUPLER CP-04 (AC Adapter (5.0V))] at adjustments other than Battery Voltage Adjustment.

- 1) Set the mode to the Photography mode(AUTO).
- 2) Connect the [USB cable].
- 3) Supply power to the camera using the jig as appropriate for the adjustment details.
- 4) Switch camera power ON while pressing the shutter button and up key.
- 5) Ensure that the Led is lit.

When steps 1 to 5 are complete, press the [Enter] key on the PC.

<Step 7>

[Displaying the firmware version]

If a firmware upgrade is required, separate instructions will be provided.

Check the details and then press the [Enter] key to proceed.

Firmware = 1.82

Vendor Name = FUJIFILM
 Manufacturer = FUJIFILM
 ProductName = FinePix HS20EXR
 Device Type = CAMERA
 SerialNo = 592D36323331000000000000000000
 Frame Work = 1.00

Please download a new version if it is necessary
 to download the firmware.
 Advance to the adjustment item selection screen
 when press the [Enter] Key of PC.

- * If the camera's firmware is an older version than the firmware in the adjustment software, the window shown on the right appears. Check the details and then press the [Enter] key to proceed.

Firmware of the camera is not the latest.

<Step 8>

[Adjustment item select screen]

- (1) A firmware download may require other adjustments depending on the firmware version downloaded. If you download firmware, separate instructions will be provided for the adjustments required when the firmware is upgraded.
- (2) When you have launched the adjustment software and exchanged data with the camera, you must carry out End Setting as the final step before returning the camera to the customer.
 If you omit End Setting, the camera remains in JIG mode (camera repair mode) and will not be recognized by the PC (as a PTP or Mass Storage device) when the customer connects the camera to a PC in normal operation.
- (3) Pressing the [X]:Restart key interrupts the adjustment software. After the "OK" screen display, returns you to the [Adjustment Software Start-up Screen].

(When adjust the same camera again, switch camera power off once, and please switch camera power on with a jig mode again.)

However, the camera will not be recognized as a PTP or Mass Storage device.

(Press the [X] key while the camera is in communication with the PC. If you press the [X] key while the camera is disconnected, the [Adjustment Software Start-up Screen] may be slow to reappear and an error may appear in the adjustment software.)

- * If the camera's firmware is an older version than the firmware in the adjustment software, the "Firmware is not latest version" message appears in red in the top-left corner of the window.

If the firmware is the latest version (or the same as the adjustment software version), "Firmware is latest version" is displayed in blue.

Firmware is latest version
FinePix HS20EXR_W adjustment item select screen

- 1.[F 9] : Lens Data Write
- 2.[L] : Level Adjustment(Normal temperature)
- 3.[F 6] : AF Adjustment
- 4.[F 4] : CMOS Defect Correction
- 5.[F 5] : Camera Adjustment
- 6.[H] : Level Adjustment(High temperature)
- 7.[G] : [IS] Gyro Gain Adjustment
- 8.[F 1] : Battery Voltage Adjustment
- 9.[F 7] : Flash Adjustment
- 10.[F11] : VIDEO Adjustment
- 11.[F12] : End Setting
- [F 8] : Firmware Download
 [Execute this item only when
 Need to change the firmware.]

[X] : Restart

Firmware is not latest version
FinePix HS20EXR_W adjustment item select screen

- 1.[F 9] : Lens Data Write
- 2.[L] : Level Adjustment(Normal temperature)
- 3.[F 6] : AF Adjustment
- 4.[F 4] : CMOS Defect Correction
- 5.[F 5] : Camera Adjustment
- 6.[H] : Level Adjustment(High temperature)
- 7.[G] : [IS] Gyro Gain Adjustment
- 8.[F 1] : Battery Voltage Adjustment
- 9.[F 7] : Flash Adjustment
- 10.[F11] : VIDEO Adjustment
- 11.[F12] : End Setting
- [F 8] : Firmware Download
 [Execute this item only when
 Need to change the firmware.]

[X] : Restart

3-9. [I]:MAIN PWB Initialize

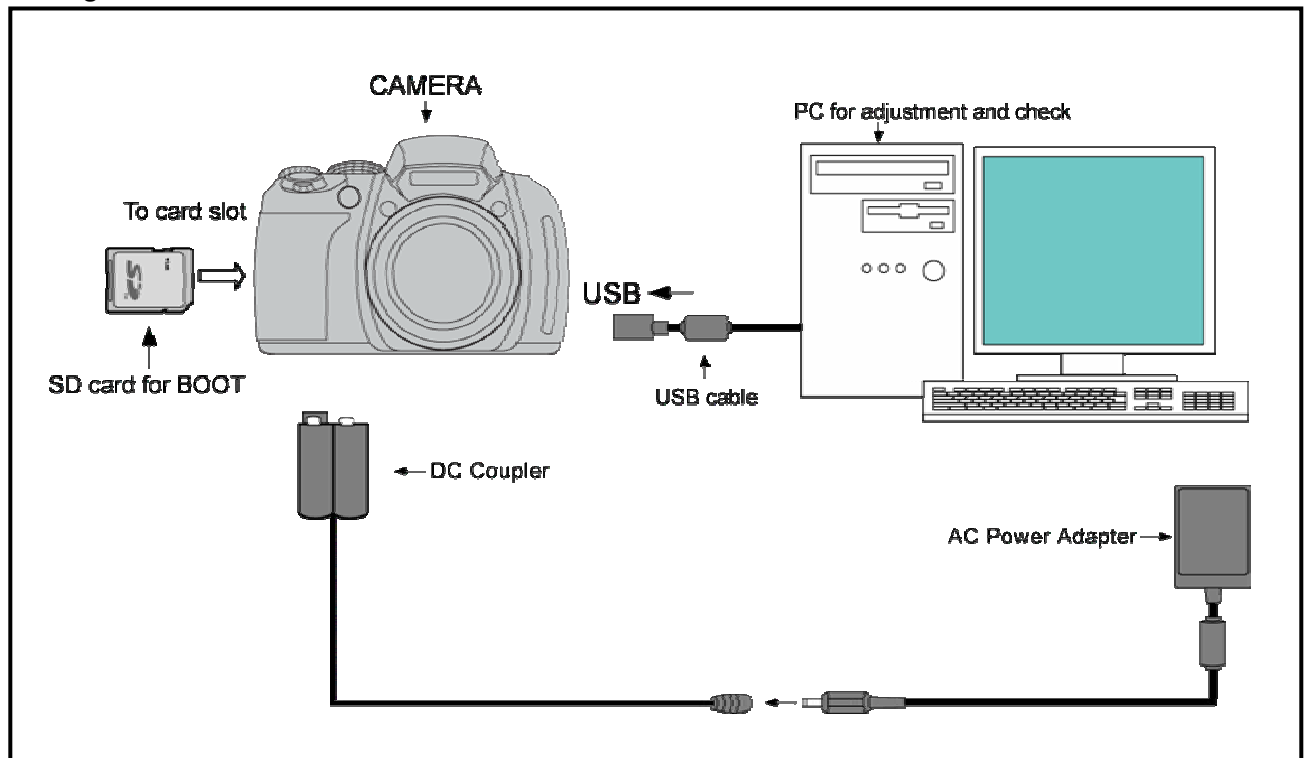
[Adjustment environment and precautions]

- When the CONST MAIN has been replaced, always carry out the "MAIN PWB Initialize" procedure before performing any other adjustments. The adjustments cannot be made correctly without first carrying out the "MAIN PWB Initialize" procedure.
- Use the SD card (for BOOT).
- If you carry out the "MAIN PWB Initialize" procedure when the CONST MAIN has not been replaced, all adjusted data will be reset to the default settings. In this event, carry out all the adjustments (excluding Firmware Download).
- Because the internal memory is formatted during the "MAIN PWB Initialize" procedure, take particular not to erase customer data when working on repair products.

[Required items]

SD card(BOOT only)	Copy ZJ01851-100 and Firmware to SD card
DC COUPLER CP-04	CR0130900U9 (Connect the AC adaptor)

<Settings for MAIN PWB Initialize



<Step 1>

[Firmware Download]

- (1) Insert the SD card(BOOT only) to the card slot.
- (2) Connect Power cable (or jig).
- (3) Switch camera power ON while pressing the shutter button and WB button.
- (4) Ensure that the LED. [GREEN blinking] -> [RED lighting] -> [ORANGE lighting] -> [RED/GREEN blinking] -> [GREEN lighting]
- (5) Turn the camera off.
- (6) Remove the Power cable (or jig) from the camera.
- (7) Remove the SD card from the camera.

*Does not USB cable during Firmware Download.

<Step 2>

- (1) Connect Power cable (or jig).
- (2) Connect the camera to the PC using the USB cable.
- (3) Switch camera power ON while pressing the shutter button and up key.

In the adjustment item select screen, select [I]:MAIN PWB Initialize.

<Step 3>**[Checking MAIN PWB Initialize]**

Implementation details

- (1) Reset the flash ROM and format the internal memory.

Press the [Y] key to begin "MAIN PWB Initialize".

Press the [C] key to cancel the procedure.

MAIN PWB Initialize

Always carry out this step if the MAIN PWB ASSY has been replaced.

[Implementation details]

1. Reset the flash Rom and
Format the internal memory.

[Y] - - -> Proceed to [MAIN PWB Initialize]
[C] - - -> Cancel.

<Step 4>**[Ending MAIN PWB Initialize]**

- (1) Turn the camera off.
- (2) Remove the Power cable (or jig) from the camera.
- (3) Remove the USB cable from the camera.
- (4) Press the [Enter] key.

Press the [Enter] key to return to the Adjustment Software Start-up Screen.

MAIN PWB Initialize

MAIN PWB Initialize is completed.

- (1) Turn off power switch.
- (2) Remove the Power cable (or jig) from the camera.
- (3) Remove USB cable from the camera.
- (4) Press the [Enter] key.

[Enter] -> Return to Start-Up Screen.

3-10. [F9]:Lens Data Write

[Adjustment environment and precautions]

- Do not vibrate the camera during adjustment.

[Required items]

Camera fixing jig	If there are no problems with the adjustment environment, a tripod or X-Y stage can be used.
LENS data for FxHS20EXR	ZJ01862-100
DC COUPLER CP-04	FZ07041-100(Connect the AC adaptor)

[Method of acquiring LENS data]

LENS data is required when the LENS ASSY or CONST MAIN is replaced.

- When you exchange LENS ASSY
--> It is attached to LENS ASSY.
- When you exchange CONST MAIN
--> Creating a LENS data floppy disk when the CONST MAIN has been replaced.
* The following example assumes the use of the serial No. shown at right.



LENS No.
KA1103
0024

<Step 1>

Read the serial number of LENS ASSY.

The numbers shown at right are as follows.

First line: KA1103(10 digits)

Bottom line: 0024 (4 digits)

The name of the LENS data file containing this number is "KA11030024.txt".

Cautions:

- The LENS data file extension is ".txt". Depending upon Windows settings, this extension may not be displayed. In this case, change the settings to ensure that it is displayed.
- In addition to numbers, letters are also used in the LENS serial No. The data file name is instructed in the same manner in this case.
- Ensure that the LENS serial No. is read correctly. If the file name is read incorrectly LENS data for another camera will be loaded when this file is used.

Fujifilm	Serial No.	Model
Fujifilm A310	230066-100	MC1000
Fujifilm A500/A800/A*10	230051-100	MC1000
Fujifilm A600/A700	230106-100	MC1000
Fujifilm A410	230105-100	MC1000
Fujifilm A800	230106-100	MC1000
Fujifilm A820/A825/A900	230109-100	MC1000
Fujifilm A920	230110-100	MC1000
Fujifilm E550	230075-100	MC1000
Fujifilm E900	230029-100	MC1000
Fujifilm F10/F11	230005-100	MC1000
Fujifilm F20	230095-100	MC1000
Fujifilm F30/F310	230074-100	MC1000
Fujifilm F401/F410	230107-100	MC1000
Fujifilm F401/F402	230059-100	MC1000
Fujifilm F410	230066-100	MC1000
Fujifilm F500	230114-100	MC1000
Fujifilm F610	230089-100	MC1000
Fujifilm F700/F710	230063-100	MC1000
Fujifilm F810	230075-100	MC1000
Fujifilm S2Pro	230059-100	MC1000
Fujifilm S3Pro	230076-100	MC1000
Fujifilm S4Pro	230103-100	MC1000

<Sample image>

<Step 2>

Download the ZIP file of top four digits from Web server (https://denhin.fujifilm.co.jp/csg_ccd/index.htm).

Open [ZJ01862-100] in the LENS data folder, and download "L420lens_KA11.zip".

<Step 3>

Decompress "L420lens_KA11.zip".

--> "KA11030024.txt" is made.

<Step 4>

Insert a writable floppy disk into the floppy disk drive on the computer.

<Step 5>

Search for "KA11030024.txt", and copy it onto the floppy disk.

Caution: Do not create a folder on the floppy disk when copying the data.

<Step 6>

Select [F9]:Lens Data Write in the adjustment item select screen.

<Step 7>

[Preparing the Lens Data Write]

Mount the camera on a tripod.

When you have completed the preparations, press the [Enter] key to proceed. **Take care not to vibrate the camera during subsequent adjustment.**

Lens Data Write

<Preparations>

Mount the camera on a tripod.

When preparation is complete, press the [Enter] key on the PC.

-->The lens is extended when the [Enter] key is pressed.

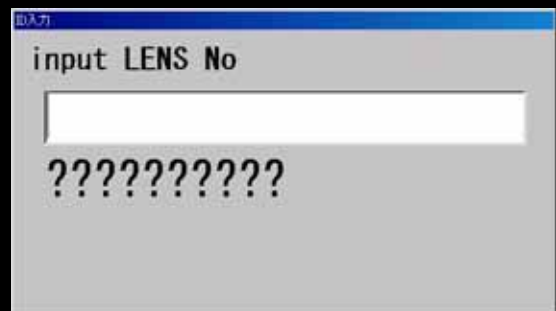
<Step 8>

[Lens number input]

- (1) Enter the 10-digit Lens number of camera in the input box.
- (2) Insert the floppy disk containing the Lens data into the floppy disk drive.

When you have completed the preparations, press the [Enter] key to proceed.

LENS QR CODE READ



<Step 9>

[Ending Lens Data Write]

After completing the adjustments, press the [Enter] key to proceed. The adjustment item select screen reappears.

**Lens Data Write is completed.
Press the [Enter] key to return
to the Adjustment Items Select Screen.**

3-11. [L]: Level Adjustment(Normal temperature)

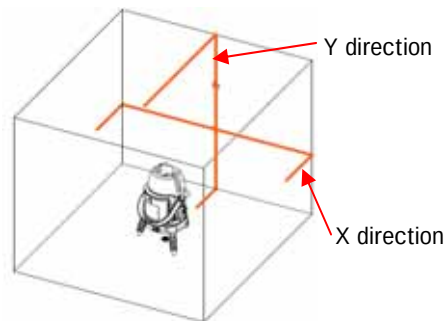
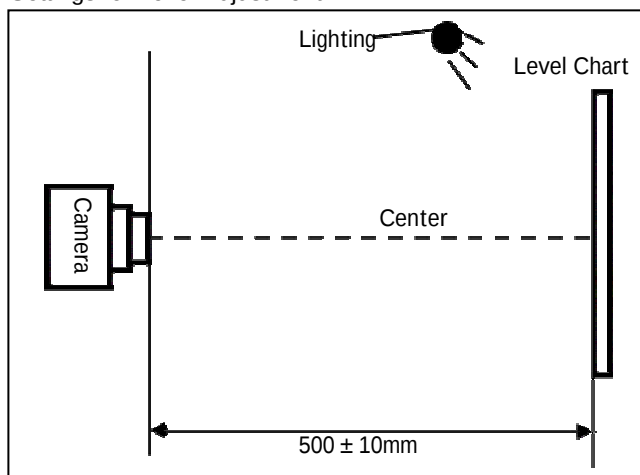
[Adjustment environment and precautions]

- Adjust the lighting to give a brightness of 9.0 to 11.0 EV on the Level chart surface..
- Check that Lens Data Write is finished..

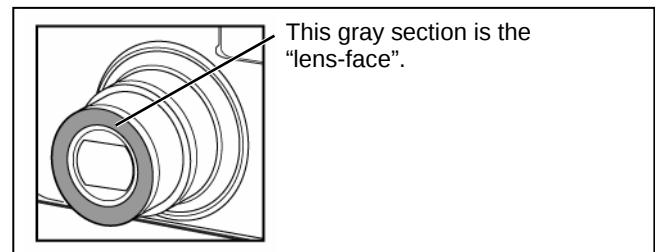
[Required items]

Camera fixing jig	If there are no problems with the adjustment environment, a tripod or X-Y stage can be used.
Lighting	Illuminate the chart
FxHS20EXR/X100 Level Chart	ZJ01849-100
FxHS20EXR Level jig	ZJ01859-100
Rotation axis Stand	ZJ01858-100
DC COUPLER CP-04	CR0130900U9 (Connect the AC adaptor)
Laser telemeter	Marketing product. Please purchase it in a general merchandising store. Maker : Makita, Model : SK308PZ When it's following specification equal to "SK308PZ", the Laser telemeter container is practicable. • Precision : $\pm 1\text{mm}/10\text{m}$ • Line Point laser : X direction/Y direction

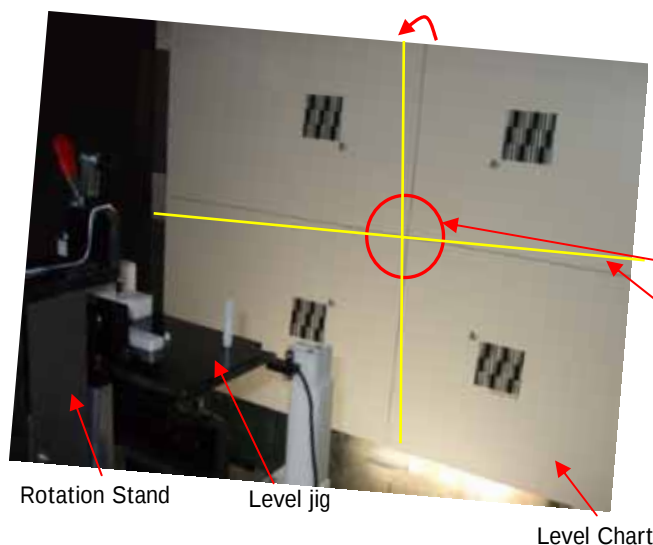
<Settings for Level Adjustment>



< Line Point laser movement of Laser telemeter >



<Settings for Level Chart>



Adjust it in the following procedure at the time of "Level jig zero degree" so that "Level Chart" becomes level.

- (1) Setting Rotation Stand in the horizontal place.
- (2) Setting of Level jig in Rotation Stand. Setting of Level jig at the time of "0 degrees" to become level.
- (3) Adjust the positions so that the distance from the level chart to the camera's lens-face is $500 \pm 5\text{ mm}$.
- (4) The Chart center comes to the LCD center.
- (5) Setting Laser telemeter in the horizontal place.
- (6) Irradiate Line Point in Chart from telemeter.
- (7) Turn Chart to Line Point.
- (8) The chart center confirms a thing in the LCD center.

<Step 1>

In the adjustment item select screen, select [L]: Level Adjustment(Normal temperature).

<Step 2>

[Preparing for Level Adjustment(Normal temperature)]

- (1) Prepare the Level chart.
- (2) Mount the camera on the Level jig so that it is facing the level chart.
- (3) Adjust the positions so that the distance from the level chart to the camera's lens-face is 500 $\pm$ 5 mm.

When you have completed the preparations, press the [Enter] key to proceed.

Level Adjustment(Normal temperature)

- (1) Prepare a Level chart (1000mm x 700mm or more)..
- (2) Set the camera in the [Level Jig]..
- (3) Set the distance between the camera and the Level chart to 500 $\pm$ 5mm

When the camera temperature is less than 30 degrees, adjust it.

When preparations (1) - (3) are complete, press the [Enter] key on the PC.

--> The lens is extended when the [Enter] key is pressed.

<Step 3>

[Level Adjustment(Normal temperature) initialization]

- (1) Set the camera and Level chart to designated distance.

When you have completed the preparations, press the [Enter] key to proceed.

Level Adjustment(Normal temperature)

- (1) Adjust the position of the camera so that the center of the Level chart is displayed in the camera LCD.

When preparations (1) is complete, press the [Enter] key.

A = 500 $\pm$ 5mm

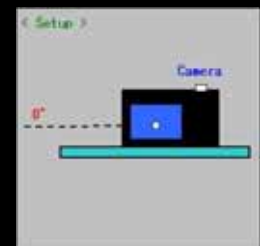


<Step 4>

- (1) Set the Level jig in 0 degree.

When you have completed the preparations, press the [Enter] key to proceed.

Set up the posture of the camera in the angle of 0 degree.



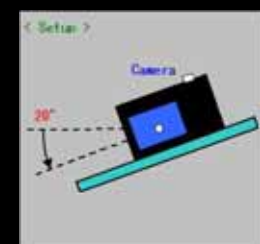
Press the [Enter] key.

<Step 5>

- (1) Set the Level jig in 20 degree.

When you have completed the preparations, press the [Enter] key to proceed.

Set up the posture of the camera in the angle of 20 degree.

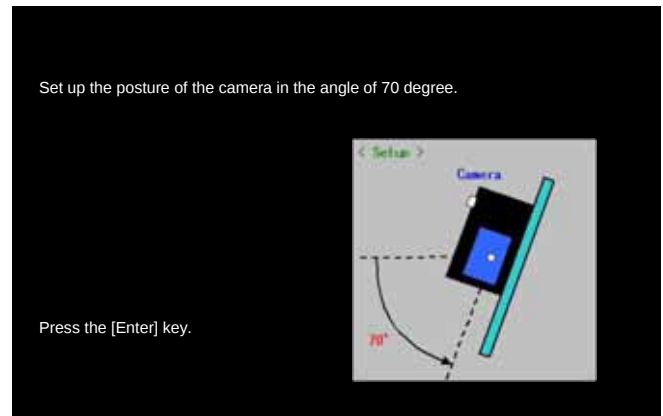


Press the [Enter] key.

<Step 6>

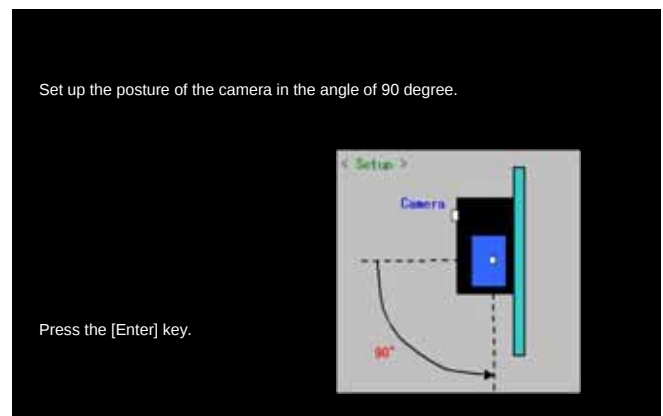
- (1) Set the Level jig in 70 degree.

When you have completed the preparations, press the [Enter] key to proceed.

**<Step 7>**

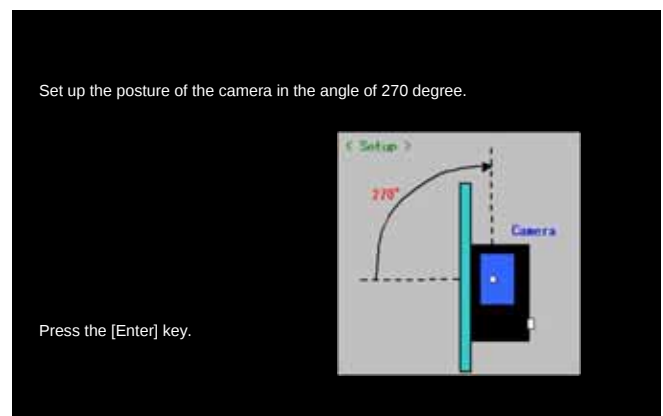
- (1) Set the Level jig in 90 degree.

When you have completed the preparations, press the [Enter] key to proceed.

**<Step 8>**

- (1) Set the Level jig in 270 degree.

When you have completed the preparations, press the [Enter] key to proceed.

**<Step 9>****[Ending Level Adjustment(Normal temperature)]**

After completing the adjustments, press the [Enter] key to proceed.
The adjustment item select screen reappears.

Level Adjustment(Normal temperature) is completed
Press the [Enter] key to return
to the Adjustment Items Select Screen.

3-12. [F6]: AF Adjustment

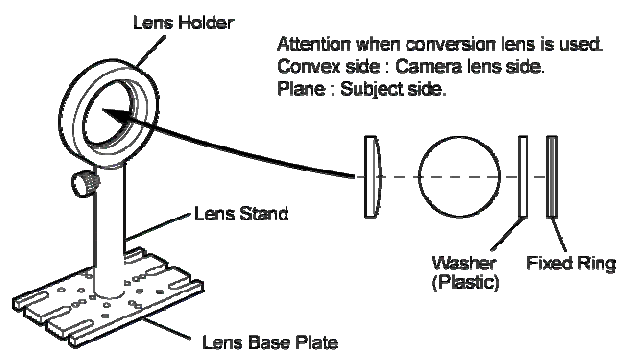
[Adjustment environment and precautions]

- Adjust the lighting to give a brightness of 8.0 to 11.0 EV on the AF chart surface.
- Always use a **900 mm** conversion lens.
- Check that Lens Data Write and Level Adjustment(Normal temperature) is finished.

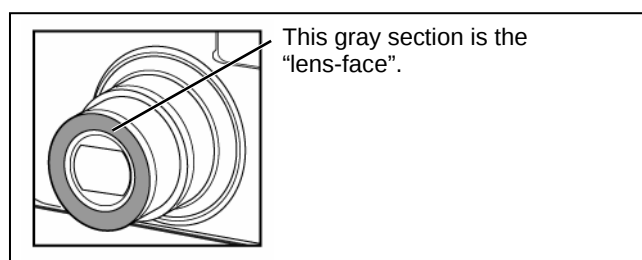
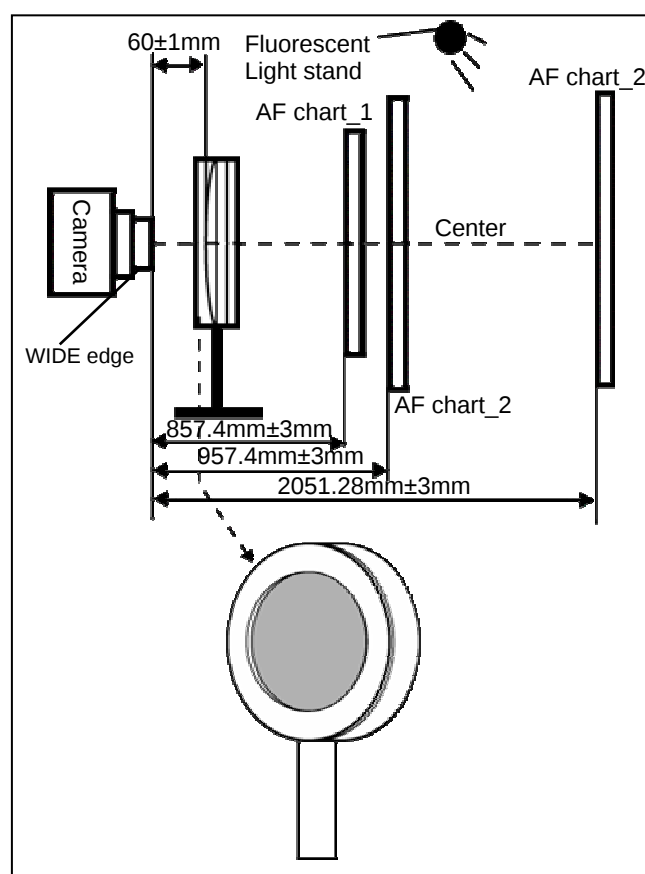
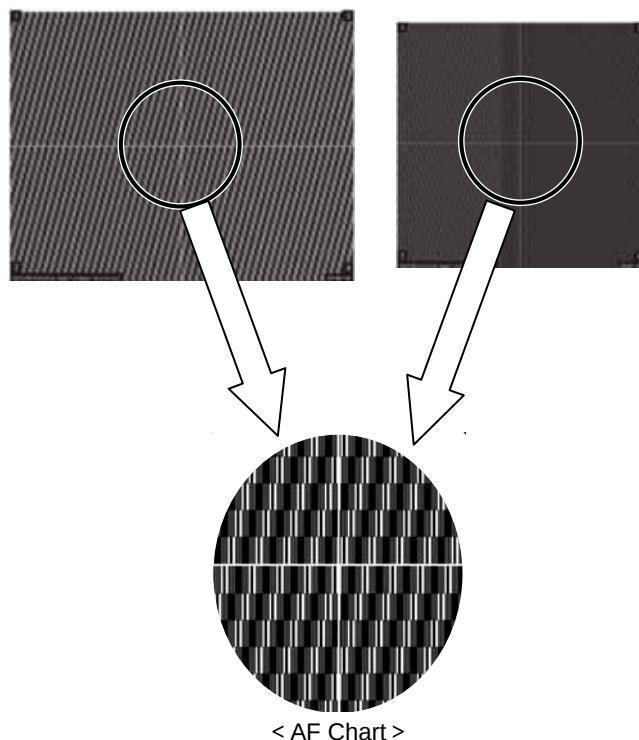
[Required items]

Camera fixing jig	If there are no problems with the adjustment environment, a tripod or X-Y stage can be used.
Lighting	Illuminate the chart
AF Chart 1	ZJ01860-100
AF Chart 2	ZJ01861-100
900mm conversion lens	ZJ00287-100
Lens Holder	ZJ00008-100
Lens Stand	ZJ00009-100(X-Y stage can also be used)
DC COUPLER CP-04	CR0130900U9 (Connect the AC adaptor)

<Settings for AF Adjustment>



Note: Attention! Conversion lens direction. Plane : Subject side



<Step 1>

In the adjustment item select screen, select [F6]: AF Adjustment.

<Step 2>

[Preparing the AF adjustment pattern box]

- (1) Have a 900 mm conversion lens ready.
- (2) Prepare the AF chart_1.
- (3) Prepare the AF chart_2.
- (4) Mount the camera on the XY stage or tripod so that it is facing the AF chart.

When you have completed the preparations, press the [Enter] key to proceed.

<Preparations>

- (1) Prepare a 900mm conversion lens.
- (2) Prepare a AF Chart_1.
- (3) Prepare a AF Chart_2.
- (4) Mount the camera on a tripod.

When preparations (1) - (4) are complete, press the [Enter] key on the PC.

-->Lens is extended when the [Enter] key is pressed.

<Step 3>

[ZOOM adjustment]

- (1) Set the zoom position to the side of the WIDE edge.

When you have completed the preparations, press the [Enter] key to proceed.

ZOOM adjustment

- (1) Turn zoom ring to the wide side.

When preparations (1) is complete, press the [Enter] key on the PC.

<Step 4>

[ZOOM adjustment]

- (1) Set the zoom position to the side of the TELE edge.

When you have completed the preparations, press the [Enter] key to proceed.

ZOOM adjustment

- (1) Turn zoom ring to the tele side.

When preparations (1) is complete, press the [Enter] key on the PC.

<Step 5>

[ZOOM adjustment]

- (1) Set the zoom position to the side of the WIDE edge.

When you have completed the preparations, press the [Enter] key to proceed.

ZOOM adjustment

- (1) Turn zoom ring to the wide side.

When preparations (1) is complete, press the [Enter] key on the PC.

<Step 6>

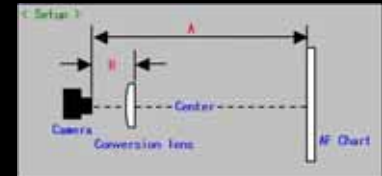
[AF Adjustment initialization]

- (1) Set up the camera and the AF Chart_1 at the specified distances.
- (2) Set the conversion lens at the specified distances.
- (3) Adjust the position of the camera so that the center of the AF Chart is displayed in the camera LCD.

When you have completed the preparations, press the [Enter] key to proceed.

- (1) Place the AF Chart_1 at a distance of 857.4 $\pm$ 3mm from the lens-face of the camera.
 - (2) Place the conversion lens at a distance of 60 $\pm$ 1mm from the lens-face of the camera.
 - (3) Adjust the position of the camera so that the center of the AF chart is displayed in the camera LCD.
- When preparations (1) - (3) are complete, press the [Enter] key on the PC.

A = 857.4 $\pm$ 3mm
B = 60 $\pm$ 1mm



<Step 7>

- (1) Set the zoom position to Target Value.

When you have completed the preparations, press the [Enter] key to proceed.

Perform repeatedly till Target Value becomes 3 from 40.

ZP01 StartPos =0180 StopPos =0112 Search =0146 SpecMin =0100 SpecMax =0204

Turn the Zoom Ring, and match ZoomPosition to the targeted value.

Now Position = 01 Target value = 03

Push '1' at ZoomPositon detection NG.

Target = 03
New ZoomPosition = 01

ZP01 StartPos =0180 StopPos =0112 Search =0146 SpecMin =0100 SpecMax =0204

**Zoom positon check OK.
Press the [Enter] key on the PC.**

Target = 03
New ZoomPosition = 01

<Step 8>

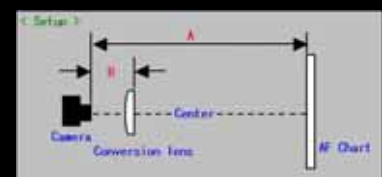
[AF Adjustment initialization]

- (1) Set up the camera and the AF Chart_2 at the specified distances.
- (2) Set the conversion lens at the specified distances.
- (3) Adjust the position of the camera so that the center of the AF Chart is displayed in the camera LCD.

When you have completed the preparations, press the [Enter] key to proceed.

- (1) Place the AF Chart_2 at a distance of 957.4 $\pm$ 3mm from the lens-face of the camera.
 - (2) Place the conversion lens at a distance of 60 $\pm$ 1mm from the lens-face of the camera.
 - (3) Adjust the position of the camera so that the center of the AF chart is displayed in the camera LCD.
- When preparations (1) - (3) are complete, press the [Enter] key on the PC.

A = 957.4 $\pm$ 3mm
B = 60 $\pm$ 1mm



<Step 9>

- (1) Set the zoom position to Target Value.

When you have completed the preparations, press the [Enter] key to proceed.

Perform repeatedly till Target Value becomes 47 from 85.

Turn the Zoom Ring, and match ZoomPosition to the targeted value.

Now Position = 40 Target value = 47

Push '1' at ZoomPosition detection NG.

Target = 47
New ZoomPosition = 40

**Zoom position check OK.
Press the [Enter] key on the PC.**

Target = 47
New ZoomPosition = 47

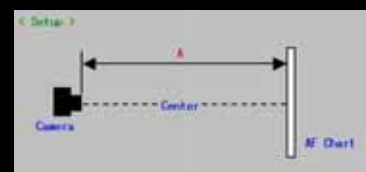
<Step 10>

- (1) Set up the camera and the AF Chart_2 at the specified distances.
(2) Without moving the camera, remove the conversion lens.

When you have completed the preparations, press the [Enter] key to proceed.

- (1) Place the AF Chart_2 at a distance of 2051.28 +3mm from the lens-face of the camera.
(2) Remove the conversion lens.
(3) Adjust the position of the camera so that the center of the AF chart is displayed in the camera LCD.
When preparations (1) - (3) are complete, press the [Enter] key on the PC.

A = 2051.28 +3mm

**<Step 11>****[Ending AF Adjustment]**

After completing the adjustments, press the [Enter] key to proceed.

The adjustment item select screen reappears.

**AF Adjustment is completed
Press the [Enter] key to return
to the Adjustment Items Select Screen.**



3-13. [F4]:CMOS Defect Correction

[Adjustment environment and precautions]

- **Darken the surroundings during adjustments** (a darkroom environment is ideal). Alternatively, prepare a box that is painted black on the inside and perform the adjustments with the camera enclosed in the box.
- Darken the surroundings as much as possible for the adjustments.
- **Do not vibrate the camera during adjustment.**
- Because the likelihood of adjustment failure increases as the internal camera temperature rises, when adjustment fails you **should first try turning the camera off for a while and then carrying out the adjustment again.**
- Check that Lens Data Write, Level Adjustment(Normal temperature) and AF Adjustment have finished.

[Required items]

Camera fixing jig	If there are no problems with the adjustment environment, a tripod or X-Y stage can be used.
PTB450F	Pattern box
LB145 filter	ZJ00699-100
DC COUPLER CP-04	CR0130900U9 (Connect the AC adaptor)

<Use the pattern box for Camera adjustment>

Turn on the power supply in the pattern box.

Afterwards, wait for about ten minutes so that the source of light may stabilize.

(1) Brightness

$160 \pm 5 \text{cd/m}^2$ (with LB145 filter)

No chart, center of pattern box

Minolta brightness meter LS-110 or equivalent

* Calibration method

Place the filter (LB145) against the pattern box. With the filter (LB145) in contact with the brightness meter, adjust the pattern box brightness to $160 \pm 5 \text{cd/m}^2$.

(2) Color temperature

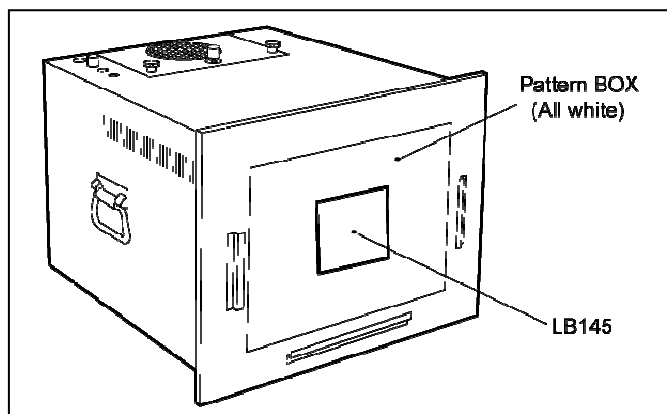
$6100 \pm 50\text{K}$ (with LB145 filter)

No chart, center of pattern box

Minolta color meter IIIIF or equivalent

* Calibration method

Place the filter (LB145) against the pattern box. With the filter (LB145) in contact with the color temperature meter, adjust the pattern box color temperature to $6100 \pm 50\text{K}$.



Calibration method of pattern box

<Step 1>

Select [F4]:CMOS Defect Correction in the adjustment item select screen.

<Step 2>

[Preparing the CMOS Defect Correction pattern box]

- (1) Stick the LB145 filter in the center of the pattern box.
- (2) Use a color temperature meter to set the color temperature to $6100 \pm 50\text{K}$.
- (3) Use a luminance meter to set the luminance to $160 \pm 5 \text{cd/m}^2$.
* Because adjustments to one setting will skew the other setting, the color temperature and luminance should be cross-checked a number of times. (Repeat steps 2 and 3 several times.)
- (4) Remove the LB145 filter and fix the camera onto the XY stage or tripod so that it is facing the pattern box.

When you have completed the preparations, press the [Enter] key to proceed.

CMOS Defect Correction

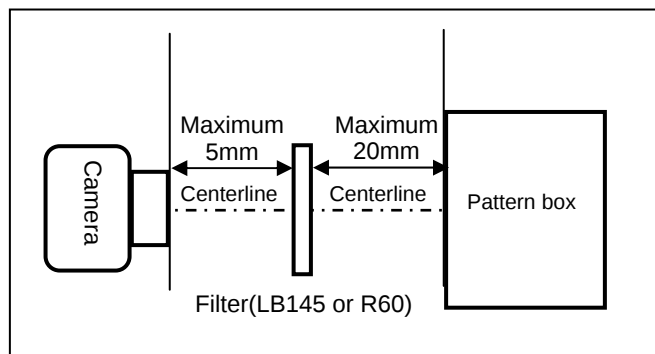
<Preparations>

- (1) Prepare the LB145 filter.
- (2) Prepare the R60 filter.
- (3) Adjust the color temperature of the pattern box (PTB450) to $6100 \pm 50\text{K}$ after having attached LB145 filter to it.
- (4) Adjust the luminance of the pattern box (PTB450) to $160 \pm 5 \text{cd/m}^2$ after having attached LB145 filter to it.
- (5) Fix the camera on a tripod and set it in front of the pattern box.

When preparations (1) - (5) are complete, press the [Enter] key on the PC.

--> Lens is extended when the [Enter] key is pressed.

<Step 3> [MIX adjustment]



- (1) Set up the camera in the designated distance.

When you have completed the preparations, press the [Enter] key to proceed.

Take care not to vibrate the camera during subsequent adjustment.

<Step 4>

- (1) Position the LB145 filter at the designated location in front of the lens.

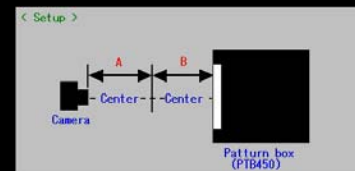
When you have completed the preparations, press the [Enter] key to proceed.

MIX adjustment

- (1) Set the distance between the camera and pattern box.
- (2) Remove the LB145 filter and the R60 filter from front of the lens.

When preparations are complete, press the [Enter] key.

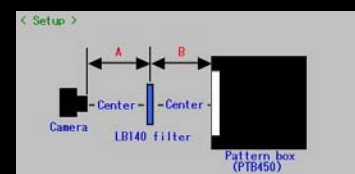
A = 5mm or less
B = 20mm or less



- (1) Set the distance between the camera and pattern box.
- (2) Place the LB145 filter in front of the lens.

When preparations are complete, press the [Enter] key.

A = 5mm or less
B = 20mm or less



<Step 5>

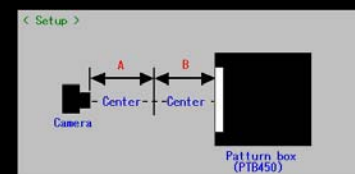
- (1) Remove the LB145 filter from the front of the lens.

When you have completed the preparations, press the [Enter] key to proceed.

- (1) Set the distance between the camera and pattern box.
- (2) Remove the LB145 filter and the R60 filter from front of the lens.

When preparations are complete, press the [Enter] key.

A = 5mm or less
B = 20mm or less



<Step 6>

- (1) Perform step 5 and 6 repeatedly.

<Step 7>

(1) Set the zoom position to Target Value.

When you have completed the preparations, press the [Enter] key to proceed.

Perform step6 and 7 repeatedly till Target Value becomes 71 from 19.

Turn the Zoom Ring, and match ZoomPosition to the targeted value.

Now Position = 01 Target value = 19

Push '1' at ZoomPositon detection NG.

Target = 19
New ZoomPosition = 01

**Zoom position check OK.
Press the [Enter] key on the PC.**

Target = 19
New ZoomPosition = 19

<Step 8>**[SHD adjustment]**

(1) Set the zoom position to the Target Value.

When you have completed the preparations, press the [Enter] key to proceed.

Perform repeatedly till Target Value becomes 71 from 19.

SHD adjustment

Turn the Zoom Ring, and match ZoomPosition to the targeted value.

Now Position = 71 Target value = 01

Push '1' at ZoomPositon detection NG.

Target = 01
New ZoomPosition = 71

SHD adjustment

**Zoom position check OK.
Press the [Enter] key on the PC.**

Target = 01
New ZoomPosition = 01

<Step 9>

[Inspection for S/N]

- (1) Position the LB145 filter at the designated location in front of the lens.

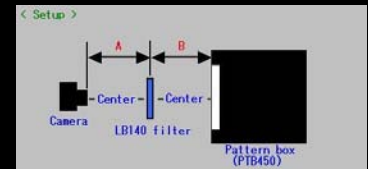
When you have completed the preparations, press the [Enter] key to proceed.

Inspection for S/N main

- (1) Set the distance between the camera and pattern box.
- (2) Place the LB145 filter in front of the lens.

When preparations are complete, press the [Enter] key.

A = 5mm or less
B = 20mm or less



<Step 10>

[Ending CMOS Defect Correction]

After completing the adjustments, press the [Enter] key to proceed.

The adjustment item select screen reappears.

CMOS Defect Correction completed.
Press the [Enter] key to return
to the Adjustment Items Select Screen.

3-14. [F5]:Camera Adjustment

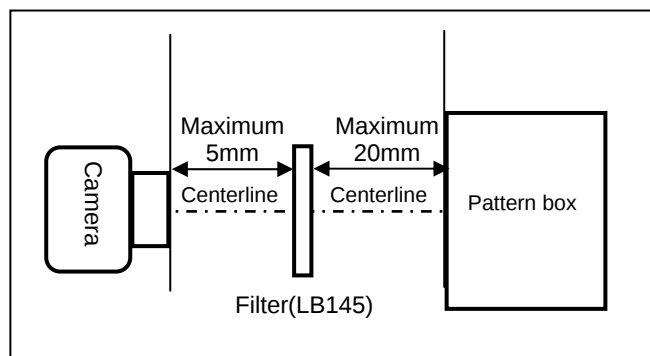
[Adjustment environment and precautions]

- **Darken the surroundings during adjustments** (a darkroom environment is ideal). Alternatively, prepare a box that is painted black on the inside and perform the adjustments with the camera enclosed in the box.
- Calibrate the pattern box before the adjustment.
- Any soiling on the pattern box dispersion plate or reflective plate will result in unevenness in the lighting and cause errors during adjustment. Take care to carry out periodic pattern box cleaning and testing.
- Check that Lens Data Write, Level Adjustment(Normal temperature), AF Adjustment and CMOS Defect Correction have finished.

★[Required items]

Camera fixing jig	If there are no problems with the adjustment environment, a tripod or X-Y stage can be used.
PTB450F	Pattern box
LB145 filter	ZJ00699-100
DC COUPLER CP-04	CR0130900U9 (Connect the AC adaptor)

<Settings for Camera Adjustment>



<Step 1>

In the adjustment item select screen, select [F5]: Camera Adjustment.

<Step 2>

[Preparing the camera adjustment pattern box]

- (1) Stick the LB145 filter in the center of the pattern box.
- (2) Use a color temperature meter to set the color temperature to $6100 \pm 50K$.
- (3) Use a luminance meter to set the luminance to $160 \pm 5 \text{ cd/m}^2$.
* Because adjustments to one setting will skew the other setting, the color temperature and luminance should be cross-checked a number of times. (Repeat steps 2 and 3 several times.)
- (4) Remove the LB145 filter and fix the camera onto the XY stage or tripod so that it is facing the pattern box.

When you have completed the preparations, press the [Enter] key to proceed.

Camera Adjustment

<Preparations>

- (1) Prepare the LB145 filter.
- (2) Adjust the color temperature of the pattern box (PTB450) to $6100 \pm 50K$ after having attached LB145 filter to it.
- (3) Adjust the luminance of the pattern box (PTB450) to $160 \pm 5 \text{ cd/m}^2$ after having attached LB145 filter to it.
- (4) Fix the camera on a tripod and set it in front of the pattern box.

When preparations (1) - (4) are complete, press the [Enter] key on the PC.

-->Lens is extended when the [Enter] key is pressed.

<Step 3>

[Shutter adjustment]

- (1) Set up the camera in the designated distance.

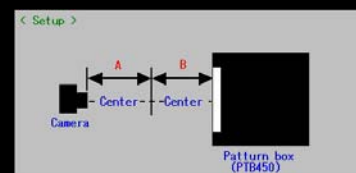
When you have completed the preparations, press the [Enter] key to proceed.

Shutter adjustment main

- (1) Set the distance between the camera and pattern box.
- (2) Remove the LB145 filter and the R60 filter from front of the lens.

When preparations are complete, press the [Enter] key.

A = 5mm or less
B = 20mm or less



<Step 4>

[Aperture sensitivity decrease rate adjustment]

- (1) Position the LB145 filter at the designated location in front of the lens.

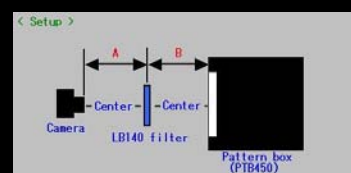
When you have completed the preparations, press the [Enter] key to proceed.

Aperture sensitivity decrease rate adjustment

- (1) Set the distance between the camera and pattern box.
- (2) Place the LB145 filter in front of the lens.

When preparations are complete, press the [Enter] key.

A = 5mm or less
B = 20mm or less



<Step 5>

[WB adjustment (3200K)]

- (1) Remove the LB145 filter from the front of the lens.

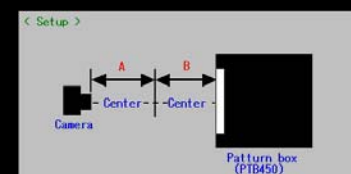
When you have completed the preparations, press the [Enter] key to proceed.

WB_3200K_NORMAL

- (1) Set the distance between the camera and pattern box.
- (2) Remove the LB145 filter from front of the lens.

When preparations are complete, press the [Enter] key.

A = 5mm or less
B = 20mm or less



<Step 6>

[Ending Camera Adjustment]

After completing the adjustments, press the [Enter] key to proceed.
The adjustment item select screen reappears.

Camera Adjustment completed
Press the [Enter] key to return
to the Adjustment Items Select Screen.

3-15. [H]: Level Adjustment(High temperature)

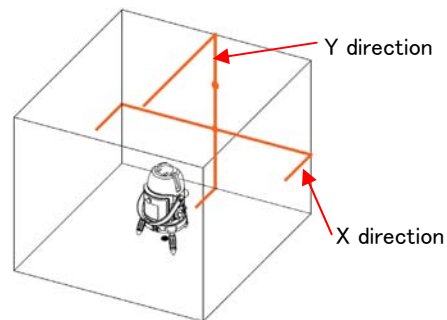
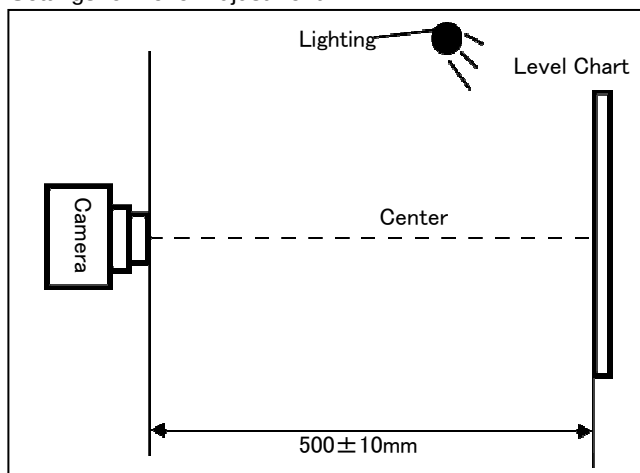
[Adjustment environment and precautions]

- Adjust the lighting to give a brightness of 9.0 to 11.0 EV on the Level chart surface.
- Check that Lens Data Write, Level Adjustment(Normal temperature), AF Adjustment, CMOS Defect Correction and Camera Adjustment have finished.
- Carry out the Level Adjustment(High temperature) at high temperature more than eight degrees from the Level Adjustment(Normal temperature).

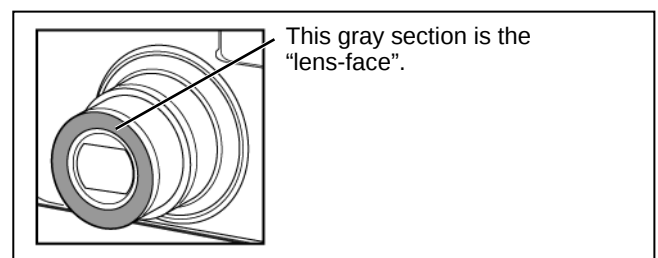
[Required items]

Camera fixing jig	If there are no problems with the adjustment environment, a tripod or X-Y stage can be used.
Lighting	Illuminate the chart
FxHS20EXR/X100 Level Chart	ZJ01849-100
FxHS20EXR Level jig	ZJ01859-100
Rotation axis Stand	ZJ01858-100
DC COUPLER CP-04	CR0130900U9 (Connect the AC adaptor)
Laser telemeter	Marketing product. Please purchase it in a general merchandising store. Maker : Makita, Model : SK308PZ When it's following specification equal to "SK308PZ", the Laser telemeter container is practicable. • Precision : $\pm 1\text{mm}/10\text{m}$ • Line Point laser : X direction/Y direction

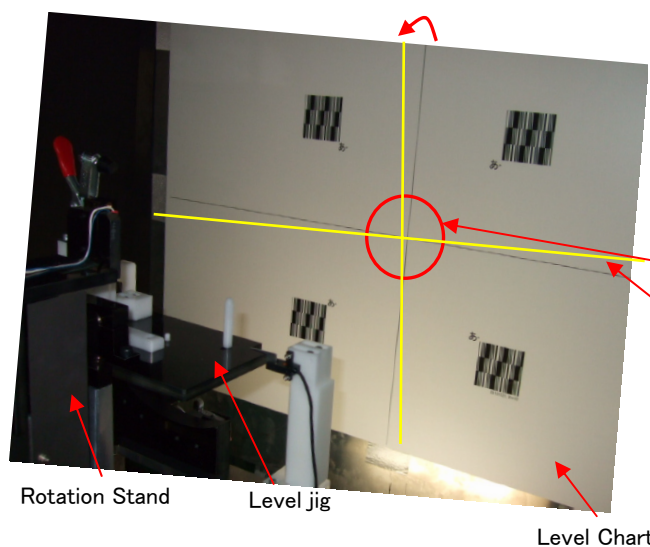
<Settings for Level Adjustment>



<Line Point laser movement of Laser telemeter>



<Settings for Level Chart>



Adjust it in the following procedure at the time of "Level jig zero degree" so that "Level Chart" becomes level.

- (9) Setting Rotation Stand in the horizontal place.
- (10) Setting of Level jig in Rotation Stand. Setting of Level jig at the time of "0 degrees" to become level.
- (11) Adjust the positions so that the distance from the level chart to the camera's lens-face is $500 \pm 5\text{ mm}$.
- (12) The Chart center comes to the LCD center.
- (13) Setting Laser telemeter in the horizontal place.
- (14) Irradiate Line Point in Chart from telemeter.
- (15) Turn Chart to Line Point.
- (16) The chart center confirms a thing in the LCD center.

<Step 1>

In the adjustment item select screen, select [H]: Level Adjustment(High temperature).

<Step 2>

[Preparing for Level Adjustment(High temperature)]

- (1) Prepare the Level chart.
- (2) Mount the camera on the Level jig so that it is facing the level chart.
- (3) Adjust the positions so that the distance from the level chart to the camera's lens-face is 500 $\pm$ 5 mm.

When you have completed the preparations, press the [Enter] key to proceed.

Level Adjustment(High temperature)

- (1) Prepare a Level chart (1000mm x 700mm or more)..
- (2) Set the camera in the [Level Jig]..
- (3) Set the distance between the camera and the Level chart to 500 $\pm$ 5mm

When the camera temperature is less than 30 degrees, adjust it.

When preparations (1) - (3) are complete, press the [Enter] key on the PC.

--> The lens is extended when the [Enter] key is pressed.

<Step 3>

[Level Adjustment(High temperature) initialization]

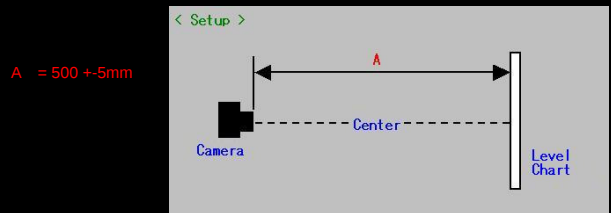
- (1) Set the camera and Level chart to designated distance.

When you have completed the preparations, press the [Enter] key to proceed.

Level Adjustment(High temperature)

- (1) Adjust the position of the camera so that the center of the Level chart is displayed in the camera LCD.

When preparations (1) is complete, press the [Enter] key.



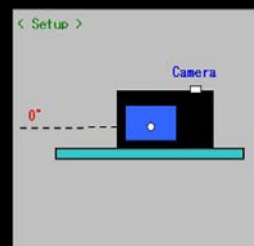
<Step 4>

- (1) Set the Level jig in 0 degree.

When you have completed the preparations, press the [Enter] key to proceed.

Set up the posture of the camera in the angle of 0 degree.

Press the [Enter] key.



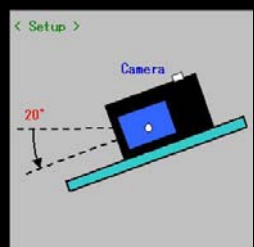
<Step 5>

- (1) Set the Level jig in 20 degree.

When you have completed the preparations, press the [Enter] key to proceed.

Set up the posture of the camera in the angle of 20 degree.

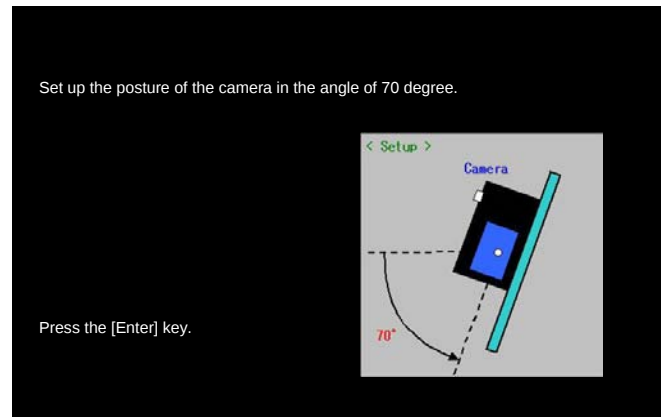
Press the [Enter] key.



<Step 6>

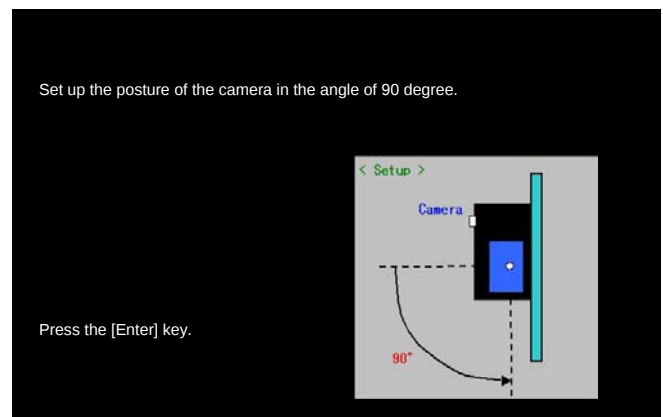
- (1) Set the Level jig in 70 degree.

When you have completed the preparations, press the [Enter] key to proceed.

**<Step 7>**

- (1) Set the Level jig in 90 degree.

When you have completed the preparations, press the [Enter] key to proceed.

**<Step 8>****[Ending Level Adjustment(High temperature)]**

After completing the adjustments, press the [Enter] key to proceed.
The adjustment item select screen reappears.

Level Adjustment(High temperature) is completed
Press the [Enter] key to return
to the Adjustment Items Select Screen.

3-16. [G]:[IS]Gyro Gain Adjustment

[Adjustment environment and precautions]

- Darken the surroundings until the luminance of the LED Chart (IS) surface is 30 lux or less.

If the above luminance is not achieved, adjust the luminance by inserting an ND filter into the filter holder and placing it in front of the lens.

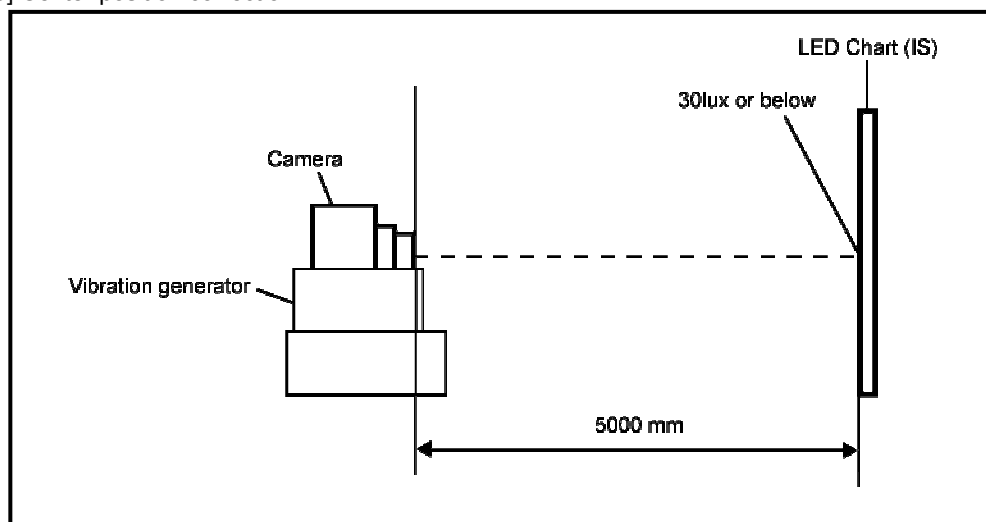
In general, for a chart surface brightness of roughly 300 lux you should use an ND filter with a density between 1.5 and 2.0.

- Check that Lens Data Write, Level Adjustment(Normal temperature),AF Adjustment, CMOS Defect Correction, Camera Adjustment and Level Adjustment(High temperature) have finished.

[Required items]

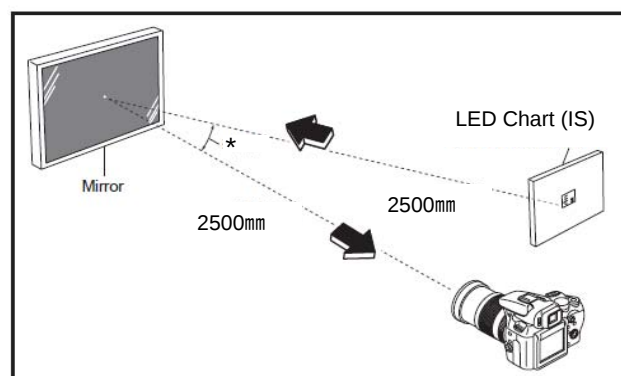
Vibration generator	ZJ01108-100 (vibration generating jig)
Eccentric axis type B	ZJ01120-100 B-type eccentric frame ($\pm 0.14^\circ$)
HS20ADP for Vibration generator	ZJ01854-100(camera mounting jig)
45 degree adaptor	ZJ01118-100 (jig for mounting the camera at a 45° angle)
Filter holder	ZJ01119-100 (jig for fixing ND filters)
LED Chart (IS)	ZJ01113-100 (fires the LED using a battery)
ND Filter	ZJ01123-100, ZJ01124-100, ZJ01125-100, ZJ01126-100 (prepare several filters with densities from 0.5 to 2.0 beforehand)
DC COUPLER CP-04	CR0130900U9(Connect the AC adaptor)

<Settings for [IS] Center position correction>

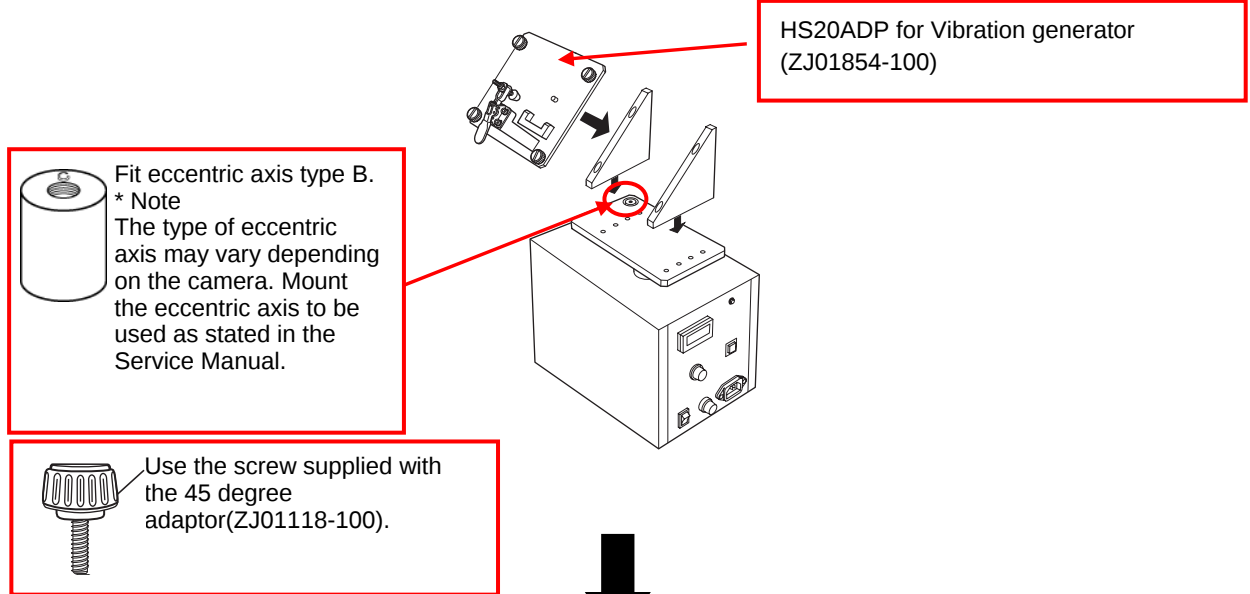


If the circumstances do not allow a distance of 5000 mm to be maintained, use a mirror as shown below to use reflections to make the adjustment. Use a mirror that is as distortion-free as possible.

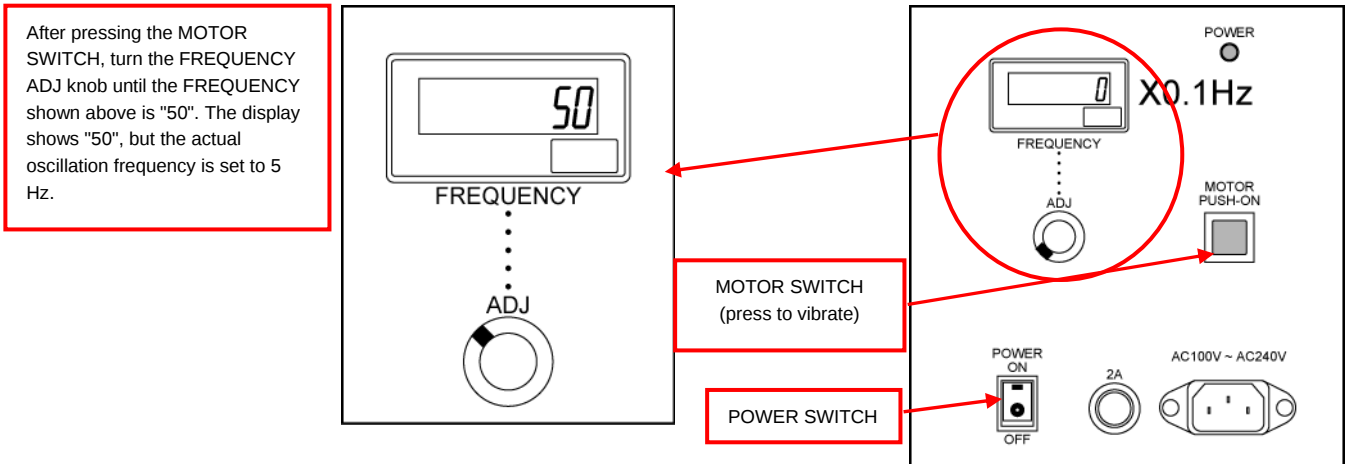
- (1) Ensure that no subject other than the chart appears in the mirror.
- (2) Position the LED multi-stripe chart, mirror and camera lens so that their respective centers are all in the same horizontal plane.
- (3) Adjust the positions of the camera and chart so that the LED appears in the center of the mirror.
- (4) Make the angle of reflection* as acute as possible to minimize subject distortion.



<Vibration generator assembly diagram>



<With the camera mounted>



<Step 1>

In the adjustment item select screen, select [G]:[IS] Gyro Gain Adjustment.

<Step 2>

[Preparing for [IS] Gyro Gain Adjustment]

- (1) Darken the surroundings until the brightness of the LED chart surface is 30 lux or less.
- (2) Set the camera in the vibration generator.
* If necessary, fit an ND filter to the front of the lens.
In general, for a chart surface brightness of roughly 300 lux, the ND filter density is between 1.5 and 2.0.

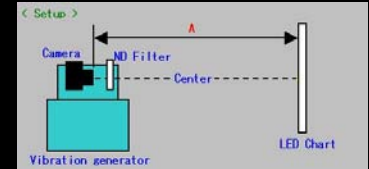
When you have completed the preparations, press the [Enter] key to proceed.

[IS]Gyro Gain Adjustment

- (1) Darken the surroundings to 30 lux or below.
If you cannot darken the surroundings, adjust the light level by mounting an ND filter on the front of the lens.
E.g. For an ambient light level of 300 lux, use a 10% transmissive (No. 1.0) ND filter.
- (2) Set the camera in the [Vibration generator].

When preparations (1) - (2) are complete, press the [Enter] key.

A = 5000mm



<Step 3>

[Preparing for [IS] Gyro Gain Adjustment]

- (1) Set the zoom position to the side of the TELE edge.
- (2) Adjust the positions so that the distance from the front of the camera lens to the LED chart is 5000 mm.
- (3) Adjust the camera position so that the LED on the LED chart appears in the center of the camera's LCD screen.

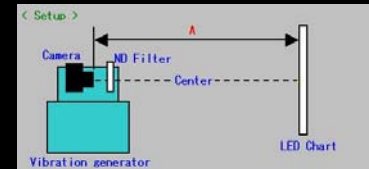
When you have completed the preparations, press the [Enter] key to proceed.

Gyro gain adjustment(for 45 vibration generator)

- (1) Position the [LED Chart] at a distance of 5000mm from the front of the camera lens.
- (2) Position the chart and camera so that the LED in the [LED Chart] is in the center of the camera's LCD screen.

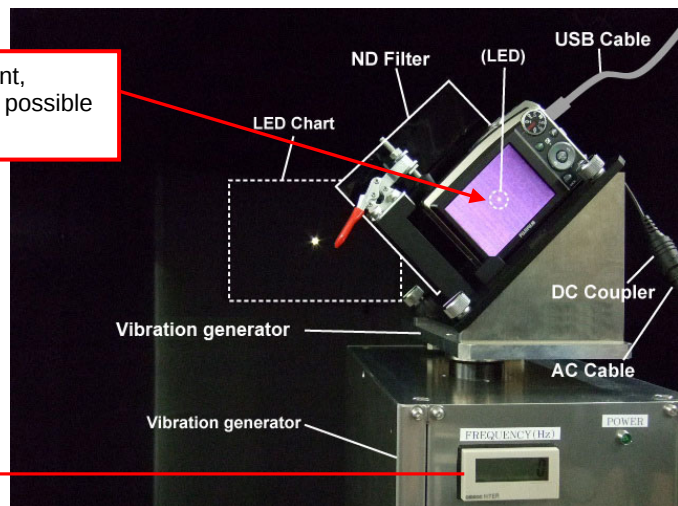
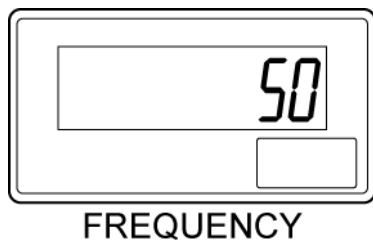
When preparations (1) - (2) are complete, press the [Enter] key.

A = 5000mm



Target = 85
Now ZoomPosition = 85

When aligning the LED bright point, position it so that it is as close as possible to the center of the LCD screen.



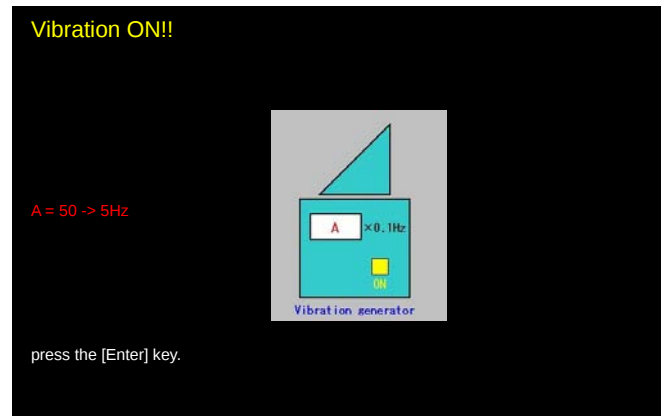
The actual camera differs from the real camera.

<Step 4>

[Vibration generator Vibration ON]

- (1) MOTOR SWITCH to on to Vibration.
Vibration frequency: 5Hz (display: 50)

When you have completed the preparations, press the [Enter] key to proceed.

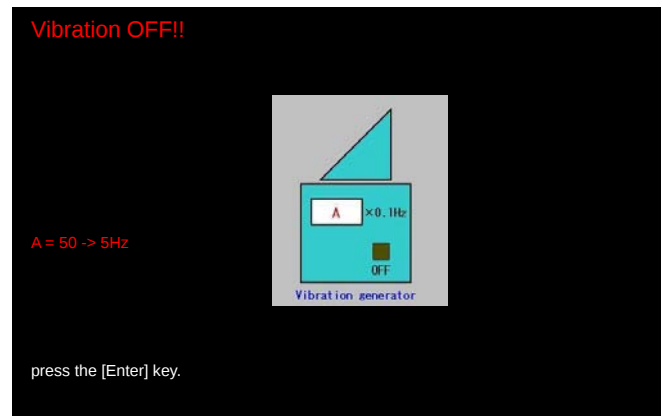


<Step 5>

[Vibration generator Vibration OFF]

- (1) MOTOR SWITCH to off to Vibration.

When you have completed the preparations, press the [Enter] key to proceed.



[If the adjustment fails]

As a guide, check the following photographed image file.

C:\FinePixHS20EXR_W\SCRIPT\L420\tebure\

B_SHAKE_OFF.jpg

The image shown on the right is very close to an ideal image.
If the area in which the bright point moves is darker or lighter than that shown in this image, try changing the ND filter density and then redoing the adjustment.

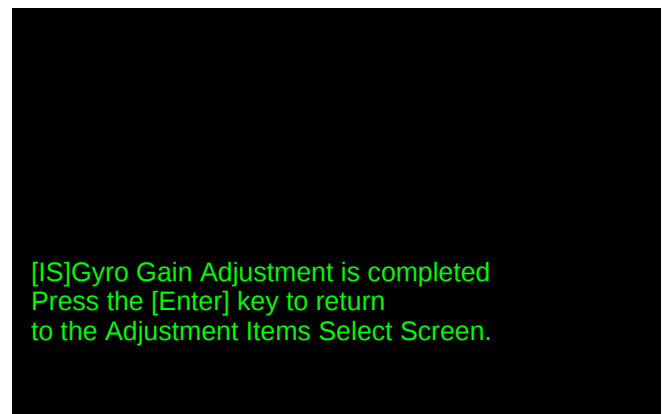


<Step 6>

[Ending [IS] Gyro Gain Adjustment]

After completing the adjustments, press the [Enter] key to proceed.

The adjustment item select screen reappears.



3-17. [F1]:Battery Voltage Adjustment

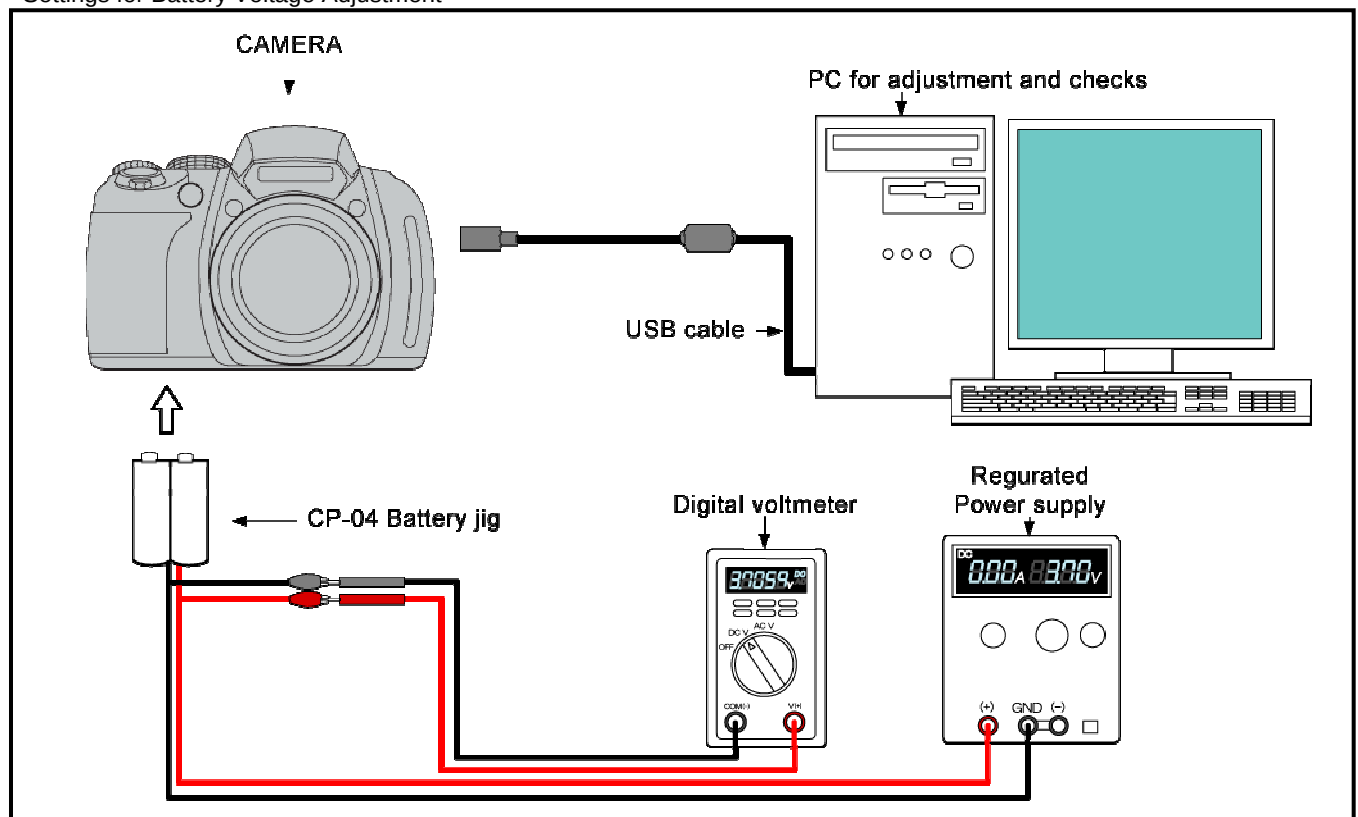
[Adjustment environment and precautions]

- If you have not been using the battery jig up until the immediately preceding adjustment, briefly pause the adjustment software (press "X" in the adjustment item select screen) and then turn the camera off.
Then set the battery jig as the power supply (set the designated voltage) and then restart the adjustment software.
- Measure the voltage at the battery jig clip position.
- Ensure that the voltage provided by the regulated power supply does not suddenly decrease during adjustment. If the voltage drops significantly below the designated voltage, the camera turns off, communication between the adjustment software and the camera is interrupted and an error occurs.

[Required items]

Camera fixing jig	If there are no problems with the adjustment environment, a tripod or X-Y stage can be used.
Regulated power supply	
Digital Voltmeter	
CP-04 Battery jig	ZJ01855-100

<Settings for Battery Voltage Adjustment>



<Step 1>

In the adjustment item select screen, select [F1]: Battery Voltage Adjustment.

<Step 2>**[Preparing for Battery Voltage Adjustment]**

Launch the adjustment software and connect the PC to the camera as shown in the figure before establishing communication between them.

* If you are not using the battery jig, briefly pause the adjustment software (Ctrl+A) and then proceed to the "Jig Mode Setup Screen" in the adjustment software. Set the digital voltmeter to voltage measurement mode and then connect the digital voltmeter to the battery jig clip. Check the digital voltmeter to ensure that the regulated voltage is set to 4.8 V. Then set the camera in the battery jig and again turn it on in Jig mode. Then proceed to Battery Voltage Adjustment.

When you have completed the preparations, press the [Enter] key to proceed.

<Step 3>**[BATT_END]**

Adjust the voltage from the regulated power supply so that [4.20V(+0.02V/-0.00V)] is displayed on the digital voltmeter.

When you have completed the preparations, press the [Enter] key to proceed.

<Step 4>**[Restoring the Battery Voltage Adjustment default voltage]**

Adjust the voltage from the regulated power supply so that [4.80V(±0.1V)] is displayed on the digital voltmeter.

When you have completed the preparations, press the [Enter] key to proceed.

<Step 5>**[Ending Battery Voltage Adjustment]**

After completing the adjustments, press the [Enter] key to proceed.

The adjustment item select screen reappears.

Battery Voltage Adjustment**<Preparations>**

1. Check that the CP-04 Battery jig and the camera are connected.
* If not, return to the Jig Mode Setup screen, and connect the CP-04 Battery jig and the camera.
2. Supply power (4.8V) to the camera from the [CP-04 Battery jig].

When preparations are complete, press the [Enter] key on the PC.
->Lens is extended when the [Enter] key is pressed.

BATT_END

Apply an input voltage of 4.20 V(+0.02V/-0.00V) in the battery jig.
When preparations are complete, press the [Enter] key.

Battery Voltage Adjustment

Apply an input voltage of 4.80V(+/-0.1V) in the battery jig.
When preparations are complete, press the [Enter] key.

Battery Voltage Adjustment is completed
Press the [Enter] key to return
to the Adjustment Items Select Screen.

3-18. [F7]:Flash Adjustment

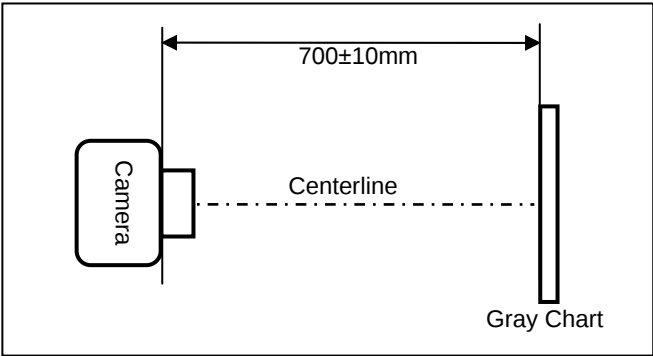
[Adjustment environment and precautions]

- **Darken the surroundings during adjustments** (a darkroom environment is ideal).

[Required items]

Camera fixing jig	If there are no problems with the adjustment environment, a tripod or X-Y stage can be used.
Gray Chart	ZJ00254-100
DC COUPLER CP-04	CR0130900U9 (Connect the AC adaptor)

<Settings for Flash Adjustment>



<Step 1>

In the adjustment item select screen, select [F7]: Flash Adjustment.

<Step 2>

[Preparing for Flash Adjustment]

- (1) Prepare the gray chart.
- (2) Mount the camera on the XY stage or tripod so that it is facing the gray chart.
- (3) Adjust the positions so that the distance from the gray chart to the camera's flash unit is 700 ± 10 mm.

When you have completed the preparations, press the [Enter] key to proceed.

Flash Adjustment

- (1) Prepare a gray chart (1000mm x 1000mm or more).
- (2) Mount the camera on a tripod.
- (3) Set the distance between the camera and the gray chart to $700 \text{ mm} \pm 10 \text{ mm}$.

When preparations (1) - (3) are complete, press the [Enter] key.

→ Lens is extended when the [Enter] key is pressed.

<Step 3>

[Preparing for Flash Adjustment]

- (1) Make the surroundings as dark as possible. (A darkroom environment is ideal.)
- (2) Adjust the positions so that the gray chart appears in the center of the camera's LCD.

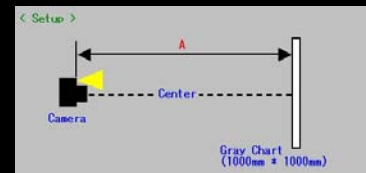
When you have completed the preparations, press the [Enter] key to proceed.

Flash Adjustment

- (1) Adjust brightness so that the periphery of the gray chart is as dark as possible.
- (2) Adjust the camera so that the entire chart is shown on the LCD monitor.

When preparations (1) and (2) are complete, press the [Enter] key.

A = $700 \pm 10 \text{ mm}$



<Step 4>

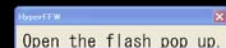
- (1) Popup of a flash

Flash pop up confirmation

Port02 = 00100000

Close

Detection NG -> 1



<Step 5>

- (1) Press the [Enter] key

Flash pop up confirmation

Port02 = 00000000

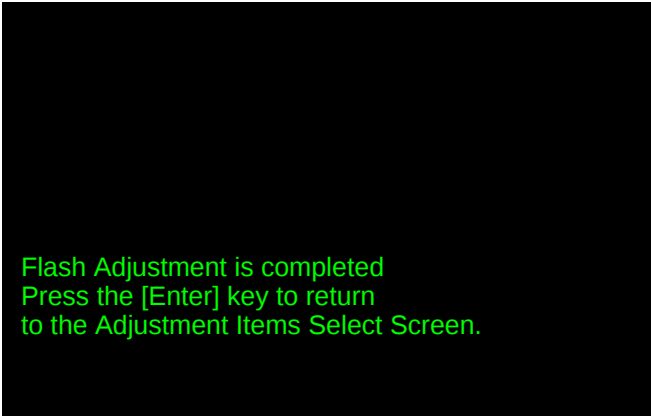
Open

Detection NG -> 1

<Step 6>

[Ending Flash Adjustment]

After completing the adjustments, press the [Enter] key to proceed.
The adjustment item select screen reappears.



Flash Adjustment is completed
Press the [Enter] key to return
to the Adjustment Items Select Screen.

3-19. [F11]:Video Adjustment

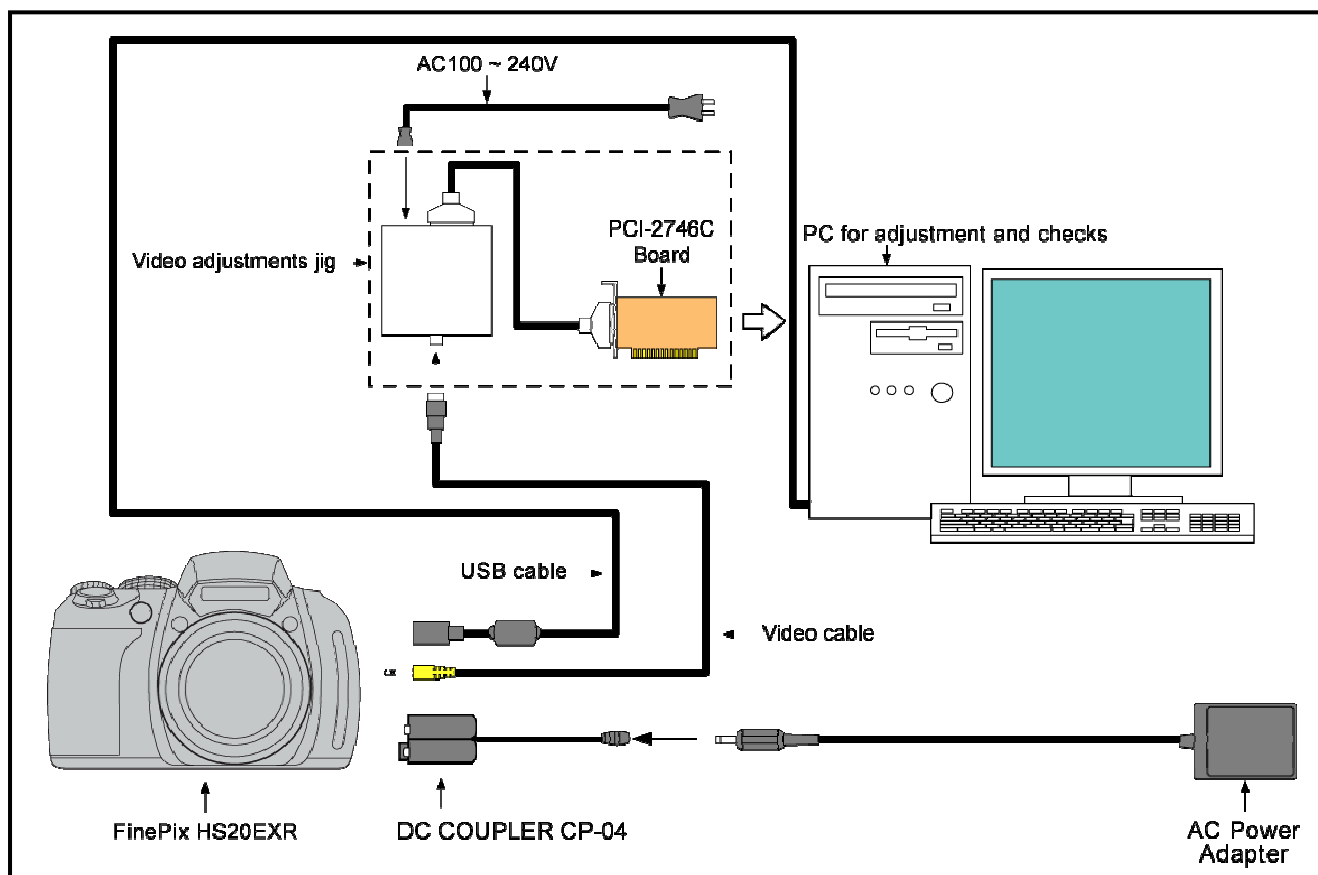
[Adjustment environment and precautions]

- Use an AC cable to supply power to the measuring equipment on the video adjustment jig.

[Required items]

Camera fixing jig	If there are no problems with the adjustment environment, a tripod or X-Y stage can be used.
Video adjustment jig	ZJ00650-100 (The cable must be connected to a PCI-2746C board installed in a PC.)
Video Cable	FZ06091-100
DC COUPLER CP-04	CR0130900U9 (Connect the AC adaptor)

<Settings for Video Adjustment>



<Step 1>

In the adjustment item select screen, select [F11]: Video Adjustment.

<Step 2>

[Restart the camera]

- (1) Turn the camera off.
- (2) Unplug the power cord from the camera.
- (3) Plug the power cord back into the camera.
- (4) Turn the camera on while holding down the shutter button and up key (↑).
- (5) Check that the LED is lit green and then press the [Enter] key.

Video Adjustment

- (1) Turn off power switch.
- (2) Remove the Power cable (or jig) from the camera.
- (3) Reconnect Power cable (or jig).
- (4) Switch camera power ON while pressing the shutter button and up key.
- (5) Press the [Enter] key after green LED lights on.

[Enter] -> VIDEO adjustment preparations.

<Step 3>**[Preparing for Video Adjustment]**

Connect the camera to the video adjustment jig using the Video cable.

When you have completed the preparations, press the [Enter] key to proceed.

Video Adjustment**<Preparations>**

- (1) Connect the camera and video adjustment jig with the video adjustment jig.
- (2) Confirm Video jig is connected with the video cable.

When preparations are complete, press the [Enter] key.

<Step 4>**[Ending Video Adjustment]**

After completing the adjustments, press the [Enter] key to proceed.
The adjustment item select screen reappears.

Video Adjustment is completed
Press the [Enter] key to return
to the Adjustment Items Select Screen.

3-20. [F8]:Firmware Download

[Adjustment environment and precautions]

- Carry out a firmware download when instructed to do so.

Depending on the firmware that is upgraded, it may be necessary to make adjustments to the camera or to reset the EEPROM.

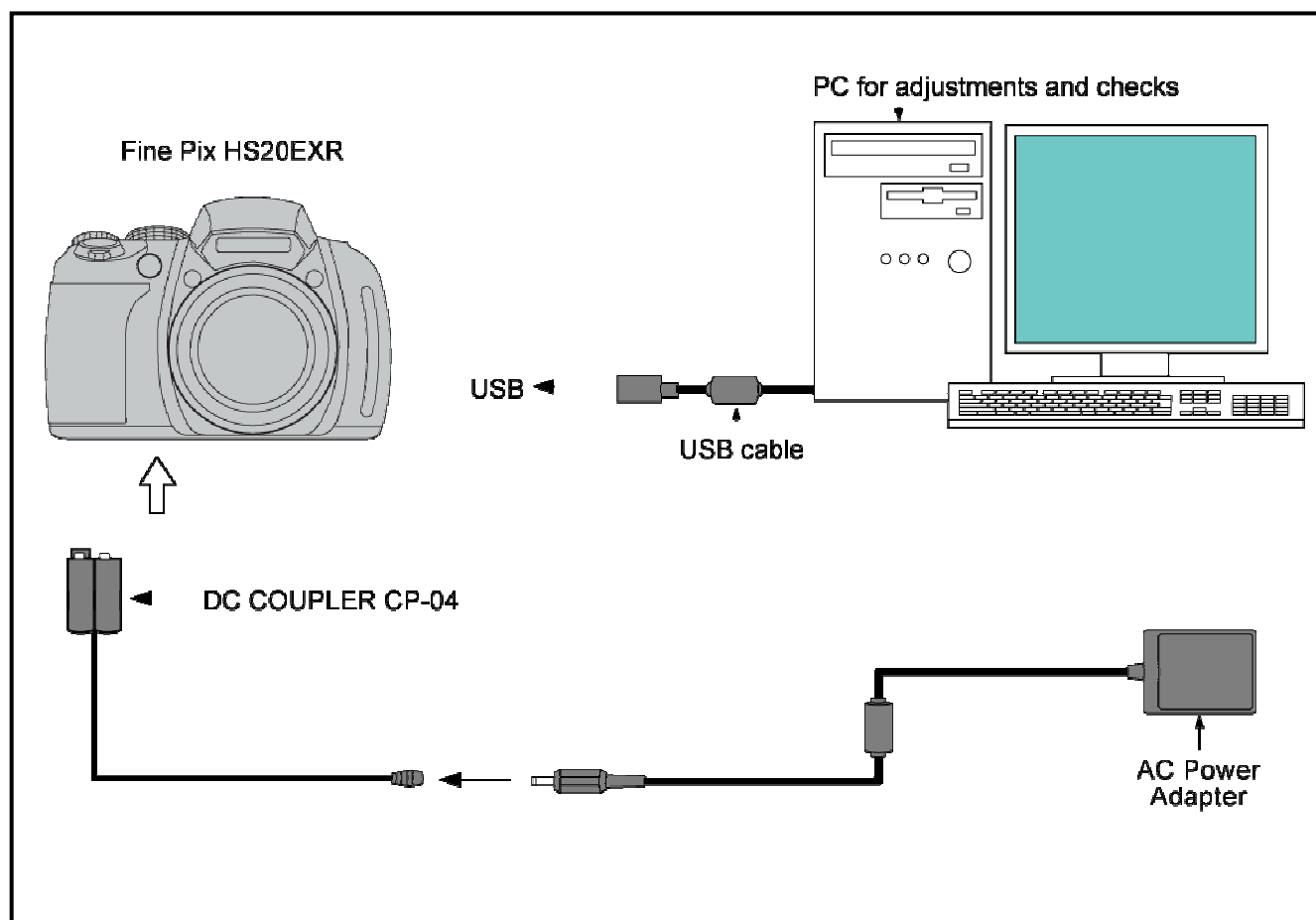
- Do not turn the camera off during firmware downloading.

Turning the camera off while a download is in progress could damage the camera. (At worst, it may no longer be possible to turn the camera on.)

[Required items]

None

<Setting for Firmware Download>



<Step 1>

In the adjustment item select screen, select [F8]: Firmware Download.

<Step 2>

[Checking Firmware Download]

Do not turn the camera off during the firmware download. The LED on the camera lights orange while the firmware is downloading.

Press the [Enter] key to begin "Firmware Download".
Press the [C] key to cancel the procedure.

Firmware Download

Firmware Download

LED lights to orange while downloading the firmware.
Do not turn off the power while downloading the firmware.

[Enter] -> Firmware Download.
[C] - - - - -> Cancel.

* The figure on the right shows the window displayed during firmware downloading.
If firmware downloading ends successfully, the LED lights green.

Firmware Download

Firmware Download

Downloading...

--> The indicator lamp is lights in green when downloading is completed normally.

c:\FinePixHS20EXR_WSCRIPT\L420\Firmware\L420RSC182.bin

<Step 3>

[Ending Firmware Download]

- (1) Turn the camera off.
- (2) Unplug the power cord from the camera.
- (3) Plug the power cord back into the camera.
- (4) Turn the camera on while holding down the shutter button and up key(⬆).
- (5) Check that the LED is lit green and then press the [Enter] key.

Press the [Enter] key to begin "Adjustment Value Protection Reset".

Firmware Download

Firmware Download is completed

- (1) Turn off power switch.
- (2) Remove the Power cable (or jig) from the camera.
- (3) Reconnect Power cable (or jig).
- (4) Switch camera power ON while pressing the shutter button and up key.
- (5) Press the [Enter] key after green LED lights on.

--> Execution [Adjustment value Protection Reset]
after press the [Enter] key.

<Step 4>

[Checking Adjustment Value Protection Reset]

To apply the firmware, reset the EEPROM while protecting the adjustment values.

- (1) Turn the camera off.
- (2) Unplug the power cord from the camera.
- (3) Plug the power cord back into the camera.
- (4) Turn the camera on while holding down the shutter button and up key(⬆).
- (5) Check that the LED is lit green and then press the [Enter] key.

Press the [Enter] key to return to the Adjustment Software Start-up Screen.

Adjust Area Backup Reset

Adjustment value Protection Reset is completed

- (1) Turn off power switch.
- (2) Remove the Power cable (or jig) from the camera.
- (3) Reconnect Power cable (or jig).
- (4) Switch camera power ON while pressing the shutter button and up key.
- (5) Press the [Enter] key after green LED lights on.

--> The adjustment software returns to Start-Up screen
after press the [Enter] key.

3-21. [F12]:End Setting

[Details]

- **Default camera destinations**

The serial number is used as a guide to setting the default destination for a camera.

- **USB_ID Write**

Every USB device (the camera in this case) must be globally unique as a USB device. To ensure this, the USB standard requires that a device-specific ID be assigned to each device.

- **Switching from repair mode to product mode**

This changes the mode from the repair mode (JIG mode) set when the adjustment software is used to product mode (the mode that allows a PC to recognize the camera as a PTP or Mass Storage device).

- **Repair site ID Write**

The repair site ID is written to the camera when the adjustment software is first launched. The settings are shown in the table below. (No setting tasks are included in the End Setting procedure.)

Item	Details			
Repair Date	Date information is acquired from the PC and written.			
Administrator ID	01(01)			
Repair Station	U.S.A.	61(a)	SAPPORO	30(0)
	CANADA	62(b)	KURIHARA	32(2)
	HAWAII	63(c)	TOKYO	33(3)
	TAIWAN	64(d)	OSAKA	35(5)
	BRITAIN	66(f)	FUKUOKA	38(8)
	GERMANY	67(g)	OTHER	7A(z)
	FRANCE	68(h)		
	SPAIN	69(i)		
	ITALY	6A(j)		
	NETHERLANDS	6B(k)		
	BELGIUM	6C(l)		
	SWEDEN	6D(m)		
	SWITZERLAND	6E(n)		
	NORWAY	6F(o)		
	FINLAND	70(p)		
	SINGAPORE	71(q)		
	CHINA	74(t)		
Repair Serial No.	A serial No. is assigned automatically and written			

[Adjustment environment and precautions]

- **The End Setting procedure must always be carried out after adjustment is completed.**

If End Setting is omitted, the camera will not be recognized as a PTP or Mass Storage device when it is connected to a PC in normal operation.

[Required items]

None

<Step 1>

In the adjustment item select screen, select [F12]: End Setting.

<Step 2>

[Checking End Setting]

Check the details and then press the [Enter] key to proceed.

End Setting

The End settings consist of the destination setting, the USB_ID write, and product mode settings (= Mass Storage recognition).

Press the [Enter] key.

<Step 3>

[Destination setting]

Look at the 3rd digit from the left in the camera's serial number and then press the corresponding key.

Selected key	Destination	3rd digit in serial no.
J	J-model	0 to 8
U	US-model	A to H, J, K
W	HK/EE/E1/RU/ID -model	L to N, P to V
C	CH-model	W to Z

Destination setting

The destination is selected from an undermentioned list, according to third character from left side of the serial number.

<J> J-model
<U> US-model
<W> HK/EE/E1/RU/ID -model
<C> CH-model

The third character
0 to 8
A to H, J, K
L to N, P to V
W to Z

<Step 4>

[Checking the USB_ID and destination]

Check the details and then press the [Enter] key to proceed.

592D36323831110216E7211z110001

Selected FinePix HS20EXR J-model.
Press the [Enter] key!

<Step 5>

[Ending Adjustment]

- 1) Turn the camera off.
- 2) Disconnect the power cord from the camera.
- 3) Disconnect the USB cable from the camera.

When you have completed these steps, press the [Enter] key. After the "OK" screen display, the Adjustment Software Start-up Screen reappears.

(When adjust the same camera again, switch camera power off once, and please switch camera power on with a jig mode again.)

FinePix HS20EXR Adjustment completed.

- 1) Turn off power switch.
- 2) Remove the Power cable (or jig) from the camera.
- 3) Remove USB cable from the camera.
- 4) Press the [Enter] key.

--> The adjustment software returns to Start-Up screen
After press the [Enter] key.

4. Inspection

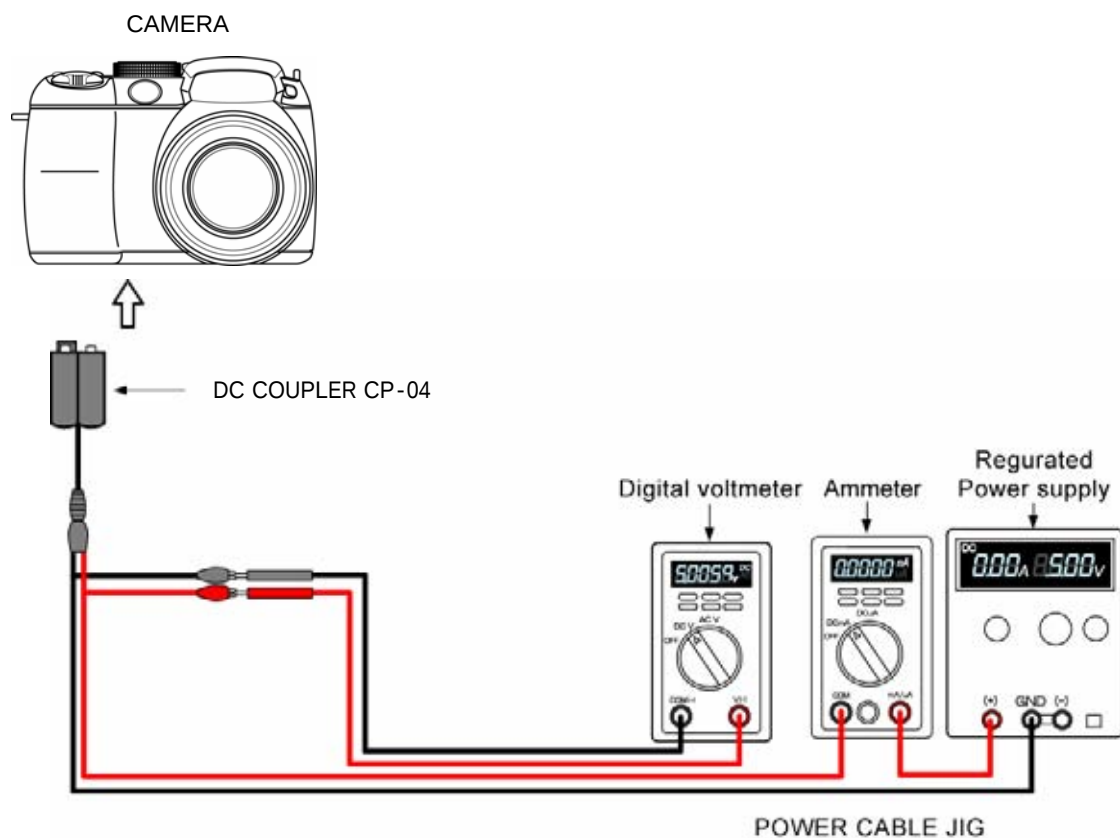
4-1. Required Measuring Equipment

Parts number	Measuring equipment	Remarks
	Power supply	AC adapter (AC-5V), Regulated power supply
	Digital voltmeter	For general use
	Ammeter	For general use (able to measure 1mA or less)
	TV Monitor	TV monitor, minimum resolution 600 lines
	PC	Windows XP
	USB Cable	This is bundled to the product
	AV Cable	This is bundled to the product
	SD CARD	To check SD card recording (For general use)
CR0130900U9	DC COUPLER CP-04	Common with adjustment JIG
ZJ00580-100	POWER CABLE JIG	Common with adjustment JIG
ZJ00525-100	Macro Chart	Resolution confirmation
ZJ00885-100	LCD Inspection Data	For LCD inspection (downloaded from WEB.)
ZJ01021-100	Face Detection Test Chart	Checking face detection operation

4-2. Connection of Measuring Equipment

Use DC COUPLER CP-04 and POWER CABLE JIG

The output current of the Regulated power supply must not become 2.5A or more.



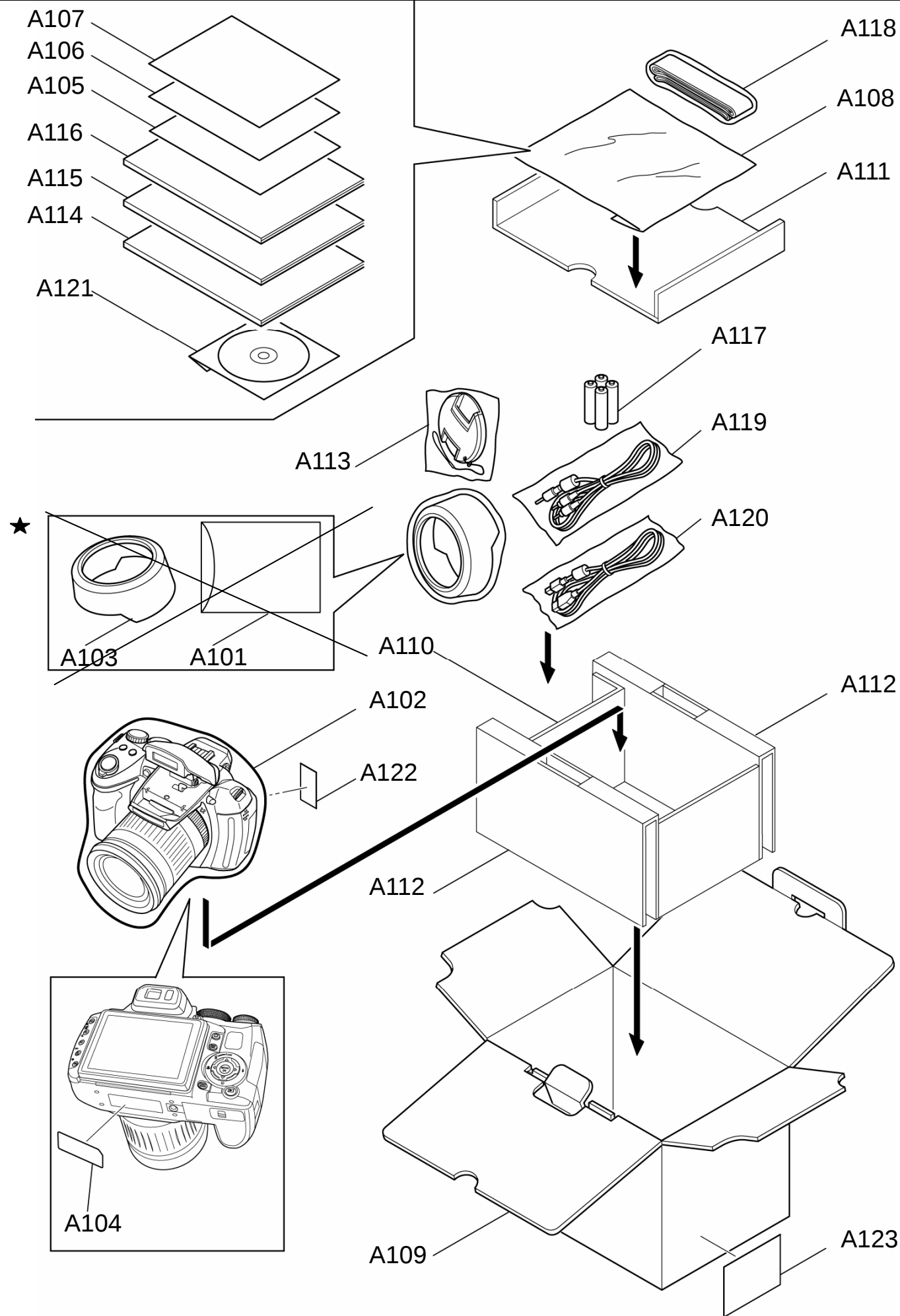
4-3. Inspection and Factory Settings

Sequence	Item	Mode	Preparations for adjustment (measurement points, subject, other)	Method of adjustment (VRs, waveforms, required values)	Measuring equipment and jigs
1	External visual check		(1) Observe the camera.	(1) Check for damage to the outer casing. (2) Check for problems with the clicking or sliding movement of switches. (3) Check for dust or fogging in the LCD.	CR0130900U9
2	Power switch check	Auto mode	(1) Plug the DC COUPLER into the camera and connect the AC-5V. (2) Insert a SD card and close the card cover. (3) Turn the camera on. (4) If a message prompting the user to set the date appears, press the button specified on the right. (5) Check the LCD screen display status. (6) Check for blemishes in the CCD live image.	(2) SD card for recording checking. (3) Check that the camera beeps. (4) <DISP/BACK> (5) Check that the live image and text is displayed. (6) Monitor a very bright subject and check that the live image does not dim or darken.	CR0130900U9
3	Zoom Operation check	Auto mode	(1) Zoom drive noise. (2) LCD screen. (3) Zoom operation (T <-> W).	(1) Check that there is no abnormal noise. (2) Check that there is no edge blurring Check that the screen display accurately tracks zooming. (3) Check that the zoom moves smoothly	
4	Shock noise check in Auto mode	Auto mode	(1) Apply a shock to the camera using the shock jig.	(1) Check for problems on the LCD monitor. (2) Check that the camera recovers from synchronicity disruption. (Note) Do not apply shocks directly to the lens or card cover.	
5	Resolution check Focusing check	Auto mode	(1) Use a macro resolution chart as the subject. (2) Set the camera to Macro mode. (3) Set-up the camera so the chart center of the screen.(Distance:10cm) (4) Press the shutter button to take a picture.	(2) Press the 4-way button (left) and check that the Macro icon (tulip) appears on the LCD monitor. (4) The indicator lamp lights green -> Intermittently lights red(recording) -> Turns off.	ZJ00525-100
6	Checking face Detection operation	Auto mode	(1) Set Face Detection to "ON". (2) Set up the camera facing the face detection chart at a distance of 30 to 40 cm. (3) Press the S1 button. (4) Set Face Detection to "OFF".	(2) Check that the Face Detection icon is displayed on the LCD. (3) Check that the focusing target is aligned with a face that has the Face Detection icon.	ZJ01021-100

Sequence	Item	Mode	Preparations for adjustment (measurement points, subject, other)	Method of adjustment (VRs, waveforms, required values)	Measuring equipment and jigs
7	Flash operation check	Auto mode	(1) Set the flash mode to Forced Flash. (2) Focus on any subject and press the shutter button to take a picture.	(1) Flash is popup and press the 4-way button (right) and check that the Forced Flash icon appears on the LCD monitor. (2) The flash emits light. The indicator lamp lights green -> Intermittently lights red(recording) -> Turns off.	
8	Movie/ audio recording check	Movie mode	(1) Press the "●" (movie record) button. (2) Press the "●" (movie record) button to Preservation.	(1) Check that movie/audio recording begins. (2) Check that movie/audio recording ends and that the data is recorded on the SD card.	
9	Movie/ audio playback check	Play back	(1) Set the camera to Playback mode. (2) Press the 4-way button (down) to play back the movie.	(2) Check that the movie is played back on the LCD monitor. Check that the sound is played back through the speaker.	
10	Playback check	Play back	(1) Plug the AV cable into the camera. (2) Check images shot at macro resolutions (manual photography). (3) Turn the camera off. The AV cable is pulled out from the camera.	(1) The LCD image disappears and the indicator lamp lights green. (2) Where the horizontal resolution is as follows: 350 TV lines or better at the center and 300 TV lines or better at the periphery (NTSC). 300 TV lines or better at the center and 250 TV lines or better at the periphery (PAL).	AV cable TV monitor
11	Playback mode check	Play back	(1) Start up in playback mode. (2) If a message prompting the user to set the date appears, press the button specified on the right. (3) Check the playback image.	(1) Press the <Playback> button. (2) <DISP/BACK> (3) Check that the last image shot appears, regardless of whether it is automatic or manual. Check that the date is displayed in the YYYY.MM.DD format.	
12	PC connection checking	Auto mode	(1) Connect the camera to the PC with the USB cable. (2) Copy the image files in the camera to a folder on the PC. (3) Disconnect the USB cable from the camera.	(1) Check that the PC recognizes the camera over a PTP connection. (2) Check that the image files have been copied to the PC.	USB cable PC
13	Erase mode check	Erase	(1) Select "Erase" -> "Erase all" from the menu and then press the "OK" button. (2) Press the "OK" button again. (3) Turn the camera off. Disconnect the SD card from the camera.	(1) Check that an erase message such as the following appears: Japan: "全コマ消去 OK?" Overseas: "ERASE ALL OK?" China: "OK?" (2) Check that the recorded images are erased.	

Sequence	Item	Mode	Preparations for adjustment (measurement points, subject, other)	Method of adjustment (VRs, waveforms, required values)	Measuring equipment and jigs
14	LCD dust/defect check	Play back	(1) Insert a LCD INSPECTION SD card. (2) Play back a completely black image. (3) Play back a completely white (75%) image.	(2) Check that there are no noticeable dust flecks or stains (bright spots, smears, flashing points, etc.) on the screen.	ZJ00885-100
15	Battery low check	Movie	(1) Plug the DC COUPLER into the camera and connect the POWER CABLE JIG. (2) Set the power supply voltage. (3) Turn the camera on. (4) Set the camera Movie mode. (5) Set the end voltage.	(2) 5.00 V $\pm$ 0.05 V (3) Check that the camera start up normally. (5) 4.25 V $\pm$ 0.02 V Check that the zoom retracts and the camera turns off after the battery low warning (end) appears.	ZJ00580-100 CR0130900U9
16	Current consumption check	Auto mode	(1) Plug the DC COUPLER into the camera and connect the POWER CABLE JIG. (2) Set the power supply voltage. (3) Turn the camera on. (4) Set the Mode to AUTO mode. (5) After the LCD live image appears, Check the current consumption. (6) Flash is popup and check that the flash is set to Forced flash mode. (7) Set the flash mode to AUTO.	(2) 5.00 V $\pm$ 0.05 V (5) 500 mA or less (6) Backup check.	ZJ00580-100 CR0130900U9
17	Leakage current	OFF	(1) Plug the DC COUPLER into the camera and connect the POWER CABLE JIG. (2) Set the power supply voltage. (3) Check the standby current when the power is turned off.	(2) 5.00 V (3) 0.5 mA or less	ZJ00580-100 CR0130900U9
18	Shipping inspection		(1) Mode. (2) SETUP frame no. (3) Battery and cards not inserted. (4) Internal memory. (5) Battery cover. (6) Check that the lens retracts. (7) Power off.	(1) EXRmode (2) New: The default SETUP frame No. setting is "Continuous", but to clear the number of frames in the frame number memory to zero, you should always change the setting to "New" before turning the camera off. (3) Normal (4) Check that the internal memory is formatted. *Excluding customers camera. (5) Closed (7) The power supply is stopped after the camera's shutdown sequence ends.	

* Please download from Web server (https://denhin.fujifilm.co.jp/csg_en/index.htm or <http://fujifilm-di.intranets.com/>).



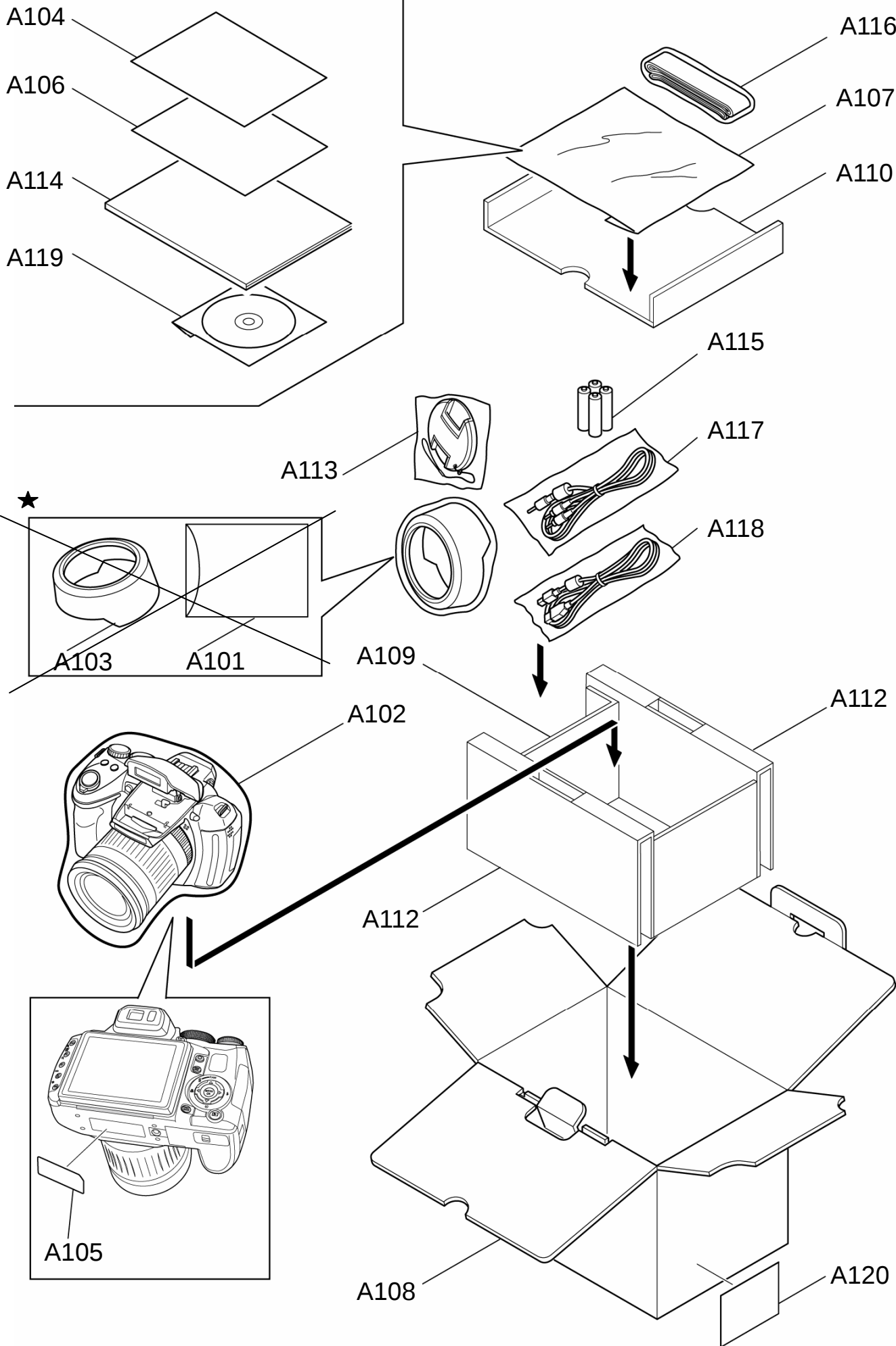
5. Parts List

5-1. Packing and Accessories

5-1-1. Fine Pix HS20EXR

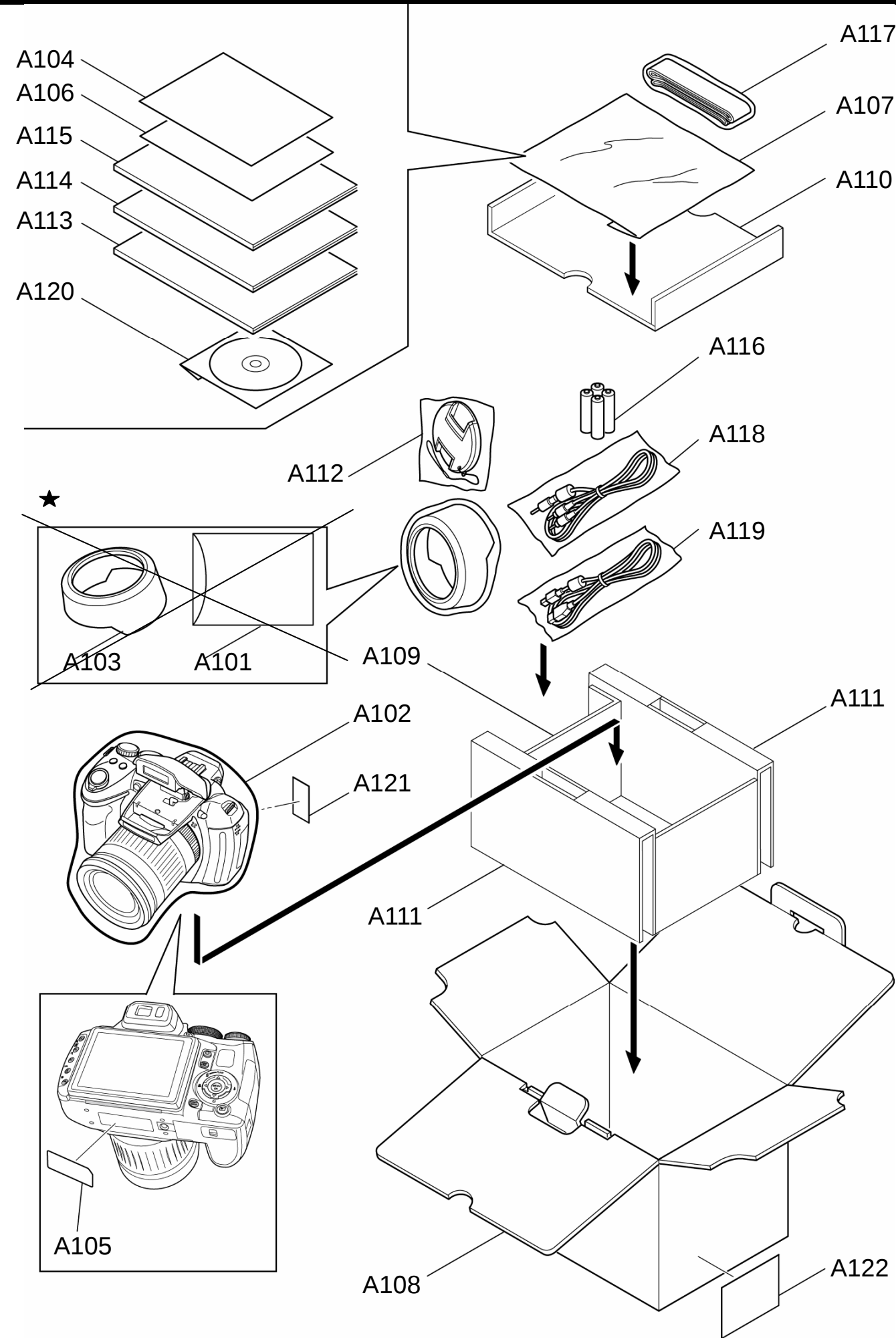
5-1-1-1. US-Model

Ref No.	Parts No.	Description	Comment
★ A101	FBF18019-100	HDPE BAG 100X200	
A102	FBF20421-101	HDPE BAG NO.13	
A103	FBF22426-100	HOOD RING (LH-10)	
A104	FBF23125-100	LABEL PD W	
A105	FBF23144-100	US WARRANTY CD-SIZE1	
A106	FBF23145-100	US STOP CD-SIZE1	
A107	FBF23146-101	WWN_PRINT CD-SIZE2	
A108	FBF23163-100	MANUAL BAG	
A109	FBF23254-200	U.BOX Y-6232	
A110	FBF23255-100	TRAY Y-6231	
A111	FBF23256-100	U.PAD Y-6231	
A112	FBF23297-100	TRAY2 Y-6231	
A113	FBF08751-100	LENS CAP	
A114	FBL01293-200	L420 BASIC MANUAL EN	
A115	FBL01293-300	L420 BASIC MANUAL FR	
A116	FBL01293-500	L420 BASIC MANUAL ES	
A117	FFZ07403-101	ALKALINE BATTERY	
A118	FFZ07774-100	SHOULDER BELT	
A119	FFZ07779-100	AV CABLE L120	
A120	FFZ07780-100	USB CABLE L100	
A121	FFZ08451-100	L420_OM CDROM	
A122	FBF19704-101	CERTIFICATIONSEAL	
A123	FBF23194-100	LBL 30x85 BLANK	



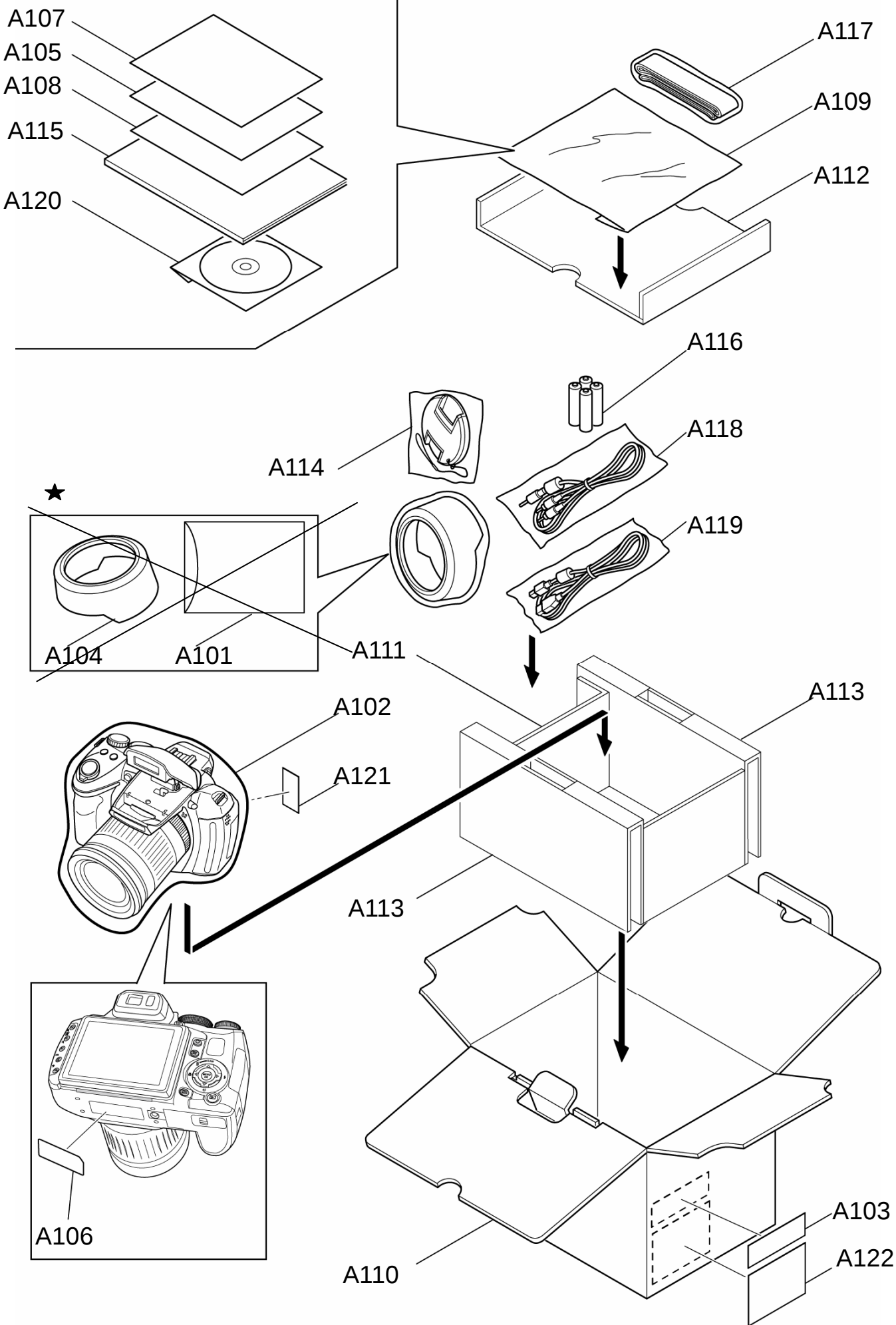
5-1-1-2. HK-Model

Ref No.	Parts No.	Description	Comment
★ A101	FBF18019-100	HDPE BAG 100X200	
A102	FBF20421-101	HDPE BAG NO.13	
A103	FBF22426-100	HOOD RING (LH-10)	
A104	FBF22818-100	PRG(WARRANTY BOOKLET)	
A105	FBF23125-500	LABEL PD HK	
A106	FBF23146-101	WWN_PRINT CD-SIZE2	
A107	FBF23163-100	MANUAL BAG	
A108	FBF23254-200	U.BOX Y-6232	
A109	FBF23255-100	TRAY Y-6231	
A110	FBF23256-100	U.PAD Y-6231	
A111	-	-	
A112	FBF23297-100	TRAY2 Y-6231	
A113	FBF08751-100	LENS CAP	
A114	FBF01293-200	L420 BASIC MANUAL EN	
A115	FFZ07403-101	ALKALINE BATTERY	
A116	FFZ07774-100	SHOULDER BELT	
A117	FFZ07779-100	AV CABLE L120	
A118	FFZ07780-100	USB CABLE L100	
A119	FFZ08451-100	L420_OM CDROM	
A120	FBF23193-100	LBL 35x52 BLANK	



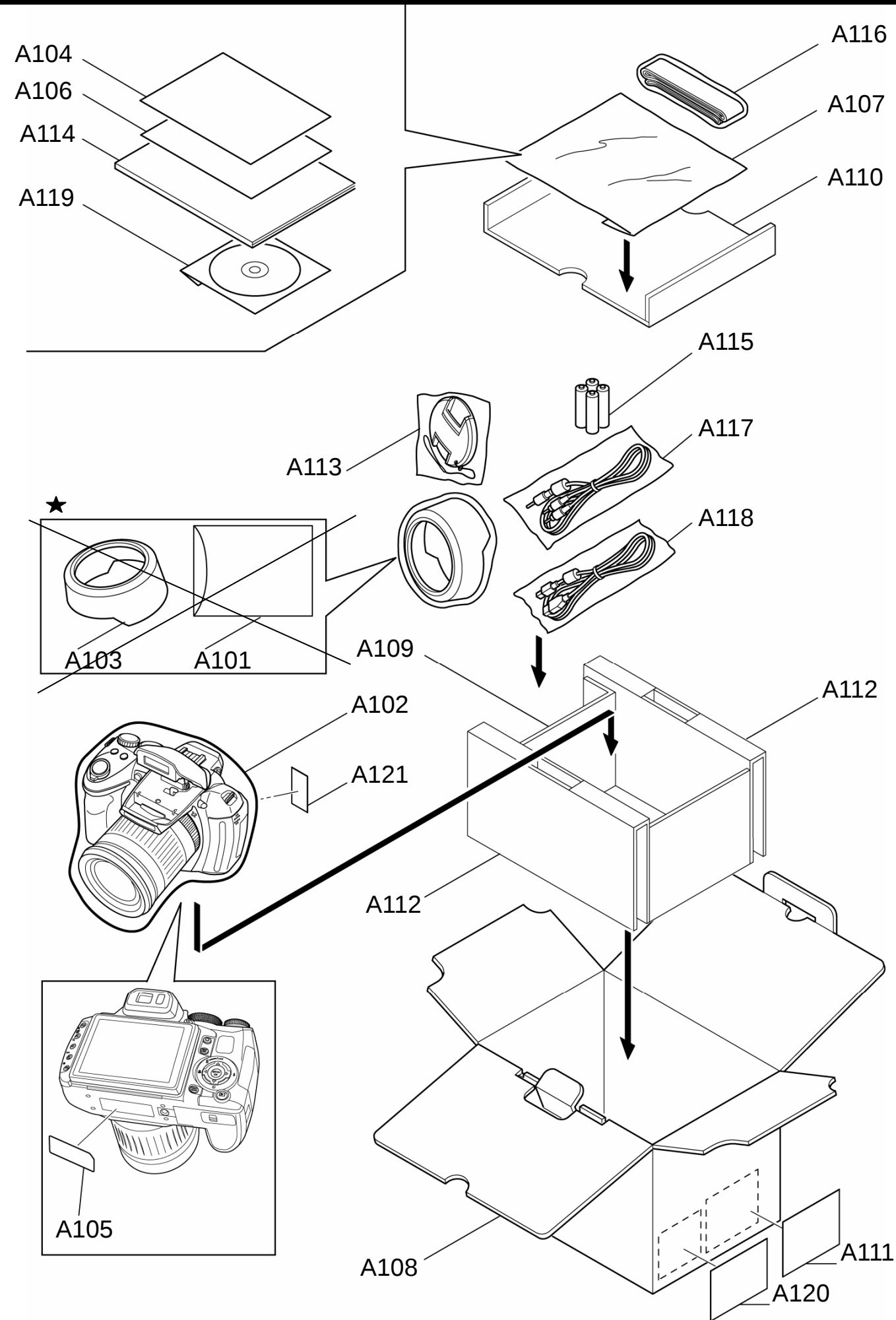
5-1-1-4. E1-Model

Ref No.	Parts No.	Description	Comment
★ A101	FBF18019-100	HDPE BAG 100X200	
A102	FBF20421-101	HDPE BAG NO.13	
A103	FBF22426-100	HOOD RING (LH-10)	
A104	FBF22818-100	PRG(WARRANTY BOOKLET)	
A105	FBF23125-401	LABEL PD E	
A106	FBF23146-101	WWN_PRINT CD-SIZE2	
A107	FBF23163-100	MANUAL BAG	
A108	FBF23254-200	U.BOX Y-6232	
A109	FBF23255-100	TRAY Y-6231	
A110	FBF23256-100	U.PAD Y-6231	
A111	FBF23297-100	TRAY2 Y-6231	
A112	FBF08751-100	LENS CAP	
A113	FBL01293-300	L420 BASIC MANUAL FR	
A114	FBL01293-400	L420 BASIC MANUAL DE	
A115	FBL01293-B00	L420 BASIC MANUAL NL	
A116	FFZ07403-101	ALKALINE BATTERY	
A117	FFZ07774-100	SHOULDER BELT	
A118	FFZ07779-100	AV CABLE L120	
A119	FFZ07780-100	USB CABLE L100	
A120	FFZ08451-100	L420_OM CDROM	
A121	FBF19704-101	CERTIFICATIONSEAL	
A122	FBF23193-100	LBL 35x52 BLANK	



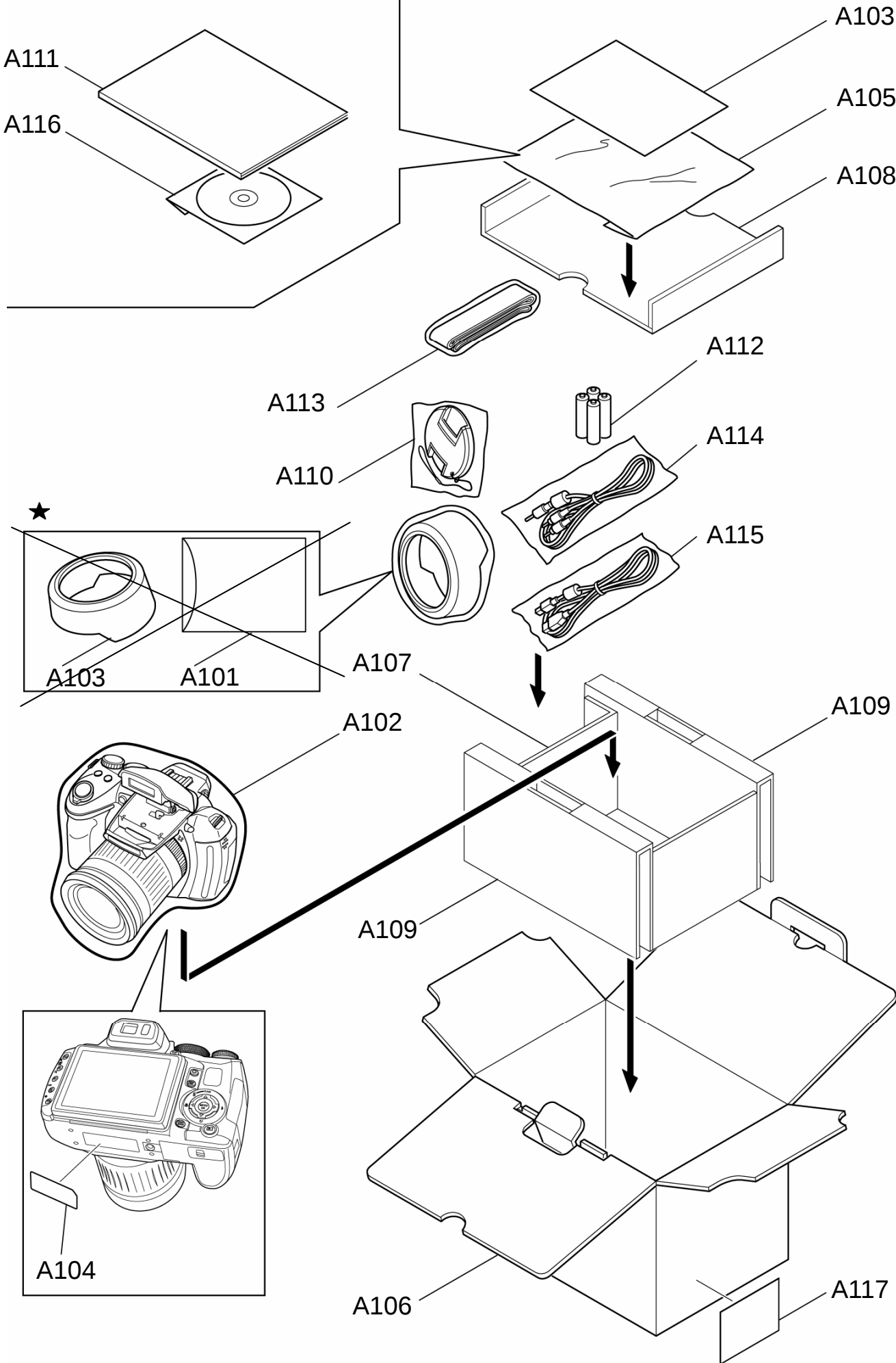
5-1-1-5. RU-Model

Ref No.	Parts No.	Description	Comment
★ A101	FBF18019-100	HDPE BAG 100X200	
A102	FBF20421-101	HDPE BAG NO.13	
A103	FBF21384-100	RU STICKER	
A104	FBF22426-100	HOOD RING (LH-10)	
A105	FBF22818-100	PRG(WARRANTY BOOKLET)	
A106	FBF23125-401	LABEL PD E	
A107	FBF23146-101	WWN_PRINT CD-SIZE2	
A108	FBF23147-100	WARRANTY RU	
A109	FBF23163-100	MANUAL BAG	
A110	FBF23254-200	U.BOX Y-6232	
A111	FBF23255-100	TRAY Y-6231	
A112	FBF23256-100	U.PAD Y-6231	
A113	FBF23297-100	TRAY2 Y-6231	
A114	FBF08751-100	LENS CAP	
A115	FBF01293-K00	L420 BASIC MANUAL RU	
A116	FFZ07403-101	ALKALINE BATTERY	
A117	FFZ07774-100	SHOULDER BELT	
A118	FFZ07779-100	AV CABLE L120	
A119	FFZ07780-100	USB CABLE L100	
A120	FFZ08451-100	L420_OM CDROM	
A121	FBF19704-101	CERTIFICATIONSEAL	
A122	FBF23193-100	LBL 35x52 BLANK	



5-1-1-6. ID-Model

Ref No.	Parts No.	Description	Comment
★ A101	FBB18019-100	HDPE BAG 100X200	
A102	FBB20421-101	HDPE BAG NO.13	
A103	FBB22426-100	HOOD RING (LH-10)	
A104	FBB22818-100	PRG(WARRANTY BOOKLET)	
A105	FBB23125-401	LABEL PD E	
A106	FBB23146-101	WWN_PRINT CD-SIZE2	
A107	FBB23163-100	MANUAL BAG	
A108	FBB23254-200	U.BOX Y-6232	
A109	FBB23255-100	TRAY Y-6231	
A110	FBB23256-100	U.PAD Y-6231	
A111	FBB23273-100	ID LABEL BLANK	
A112	FBB23297-100	TRAY2 Y-6231	
A113	FBF08751-100	LENS CAP	
A114	FBL01293-200	L420 BASIC MANUAL EN	
A115	FFZ07403-101	ALKALINE BATTERY	
A116	FFZ07774-100	SHOULDER BELT	
A117	FFZ07779-100	AV CABLE L120	
A118	FFZ07780-100	USB CABLE L100	
A119	FFZ08451-100	L420_OM CDROM	
A120	FBB23193-100	LBL 35x52 BLANK	
A121	FBB19704-101	CERTIFICATIONSEAL	



5-1-1-7. JP-Model

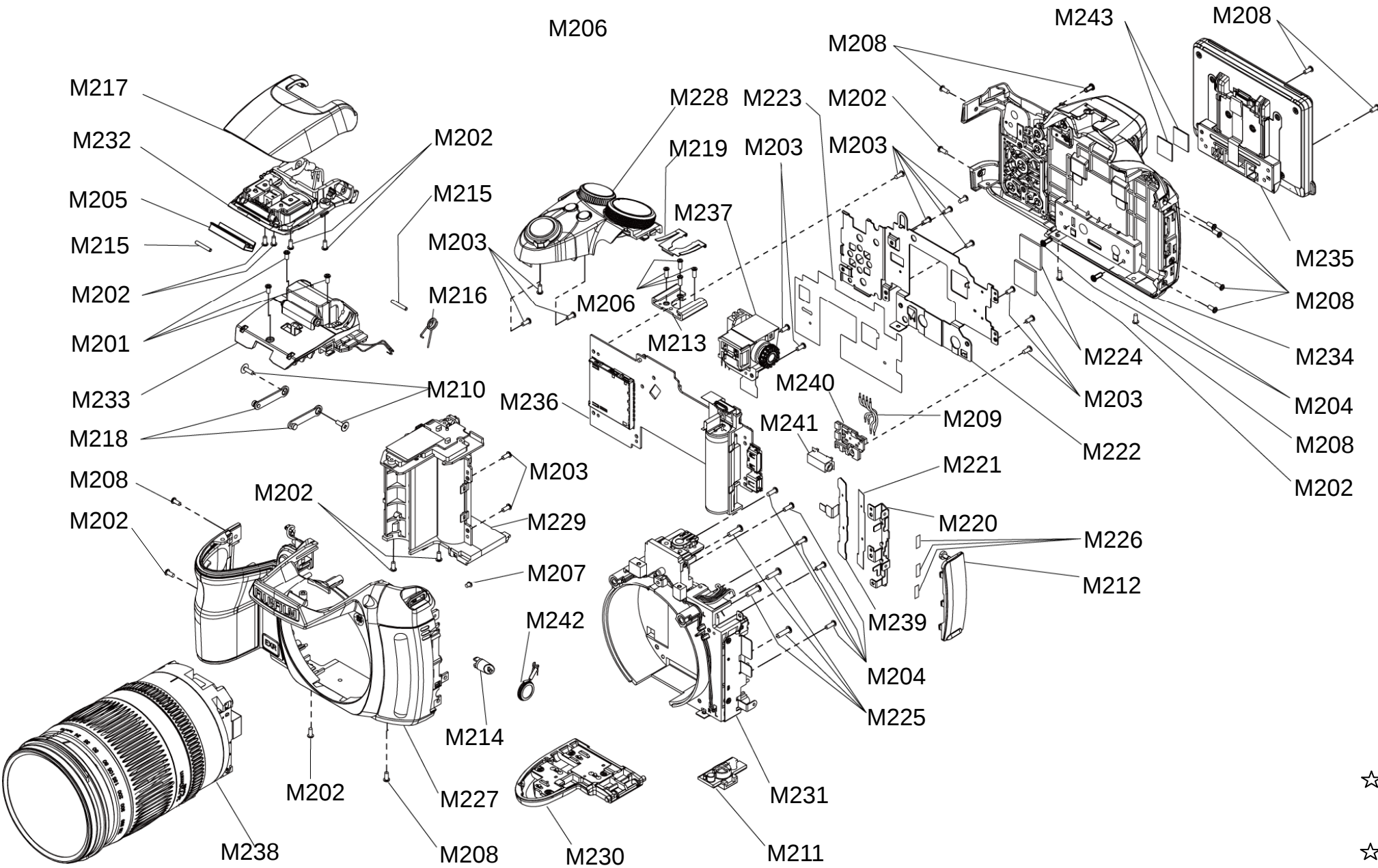


Ref No.	Parts No.	Description	Comment
A101	FBF18019-100	HDPE BAG 100X200	
A102	FBF20421-101	HDPE BAG NO.13	
A103	FBF21304-100	WARRANTY JP	
A104	FBF23125-100	LABEL PD W	
A105	FBF23163-100	MANUAL BAG	
A106	FBF23254-100	U.BOX Y-6231	
A107	FBF23255-100	TRAY Y-6231	
A108	FBF23256-100	U.PAD Y-6231	
A109	FBF23297-100	TRAY2 Y-6231	
A110	FBF08751-100	LENS CAP	
A111	FBF01292-100	L420 OM PRINT JP	
A112	FFZ07403-101	ALKALINE BATTERY	
A113	FFZ07774-100	SHOULDER BELT	
A114	FFZ07779-100	AV CABLE L120	
A115	FFZ07780-100	USB CABLE L100	
A116	FFZ08451-100	L420_OM CDROM	
A117	FBF23193-100	LBL 35x52 BLANK	

5-2. Mechanical Block

5-2-1. Fine Pix HS20EXR

5-2-1-1.US/HK/EE/E1/RU/ID/JP -Model



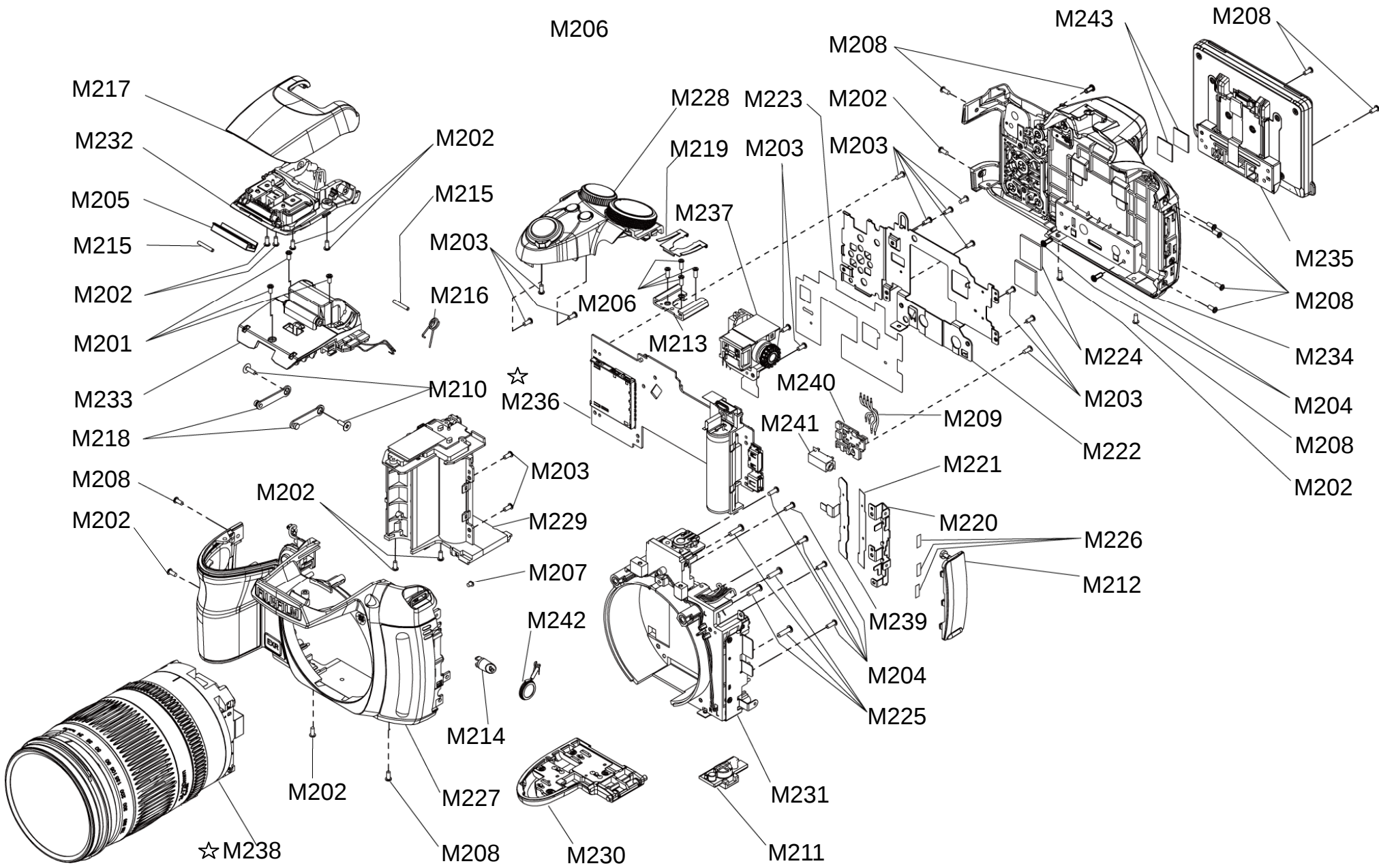
Ref No.	Parts No.	Description	Comment
M201	FBB17335-300	BT2M1.7X3.5B	
M202	FBB17335-400	BT2M1.7X4.0B	
M203	FBB17681-400	BT2M1.7X4.0	
M204	FBB17681-600	BT2M1.7X5.0	
M205	FBB18987-100	FLASH WINDOW	
M206	FBB20920-500	N-MSNM1.7X4.5	
M207	FBB21217-A00	MS2M1.7X2.0	
M208	FBB21279-400	MS2M1.7X4.0B	
M209	FBB22859-100	harness batt B	
M210	FBB22965-700	BTYM1.7X5.5	
M211	FBB23004-100	BASE TRIPOD	
M212	FBB23005-100	COVER JACK	
M213	FBB23066-100	SHOE	
M214	FBB23076-100	BUTTON FLASH	
M215	FBB23077-100	SHAFT FLASH	
M216	FBB23078-100	TSP FLASH	
M217	FBB23079-100	COVER FL TOP	
M218	FBB23080-100	ASSY PLATE STOPPER	
M219	FBB23083-100	COVER SHOE	
M220	FBB23088-100	PLATE BUTTON SIDE	
M221	FBB23089-100	TAPE WF PWB SIDE	
M222	FBB23090-100	FRAME MAIN	
M223	FBB23091-100	SHEET FRAME MAIN	
M224	FBB23130-100	SHEET LENS FPC	
M225	FBB23150-T00	MS5M2.0x7.5	
M226	FBB23153-100	SHEET PLATE SIDE	
M227	FBF08388-100	CONST FRONT	
M228	FBF08389-100	CONST TOP	
M229	FBF08390-100	CONST HOLDER BATTERY	
M230	FBF08391-100	CONST COVER BATTERY	
M231	FBF08392-100	CONST HOLDER LENS	
M232	FBF08393-100	CONST FLASH	
M233	FBF08394-100	CONST FL BOTTOM	
M234	FBF08395-100	CONST REAR	
M235	FBF08396-100	CONST LCD	
☆ M236	FBF08587-100	CONST MAIN	
M237	FBF08588-100	CONST EVF	
☆ M238	FBF08589-100	LENS ASSY Y-6231	
M239	FBF08748-100	CONST SIDE FPC	
M240	FCB2264-A201	Y6231_JACK_ASSY	
M241	FFZ04344-100	JACK_MINI 4P YELLOW	
M242	FFZ08472-100	SPEAKER	
M243	FFZ08672-100	SHEET EMC LCD-T	

Revised:10.Jun.2011

5-2-2. Fine Pix HS22EXR

5-2-2-1.CH -Model

Ref No.	Parts No.	Description	Comment
M201	FBF17335-300	BT2M1.7X3.5B	
M202	FBF17335-400	BT2M1.7X4.0B	
M203	FBF17681-400	BT2M1.7X4.0	
M204	FBF17681-600	BT2M1.7X5.0	
M205	FBF18987-100	FLASH WINDOW	
M206	FBF20920-500	N-MSN1.7X4.5	
M207	FBF21217-A00	MS2M1.7X2.0	
M208	FBF21279-400	MS2M1.7X4.0B	
M209	FBF22859-100	harness batt B	
M210	FBF22965-700	BTYM1.7X5.5	
M211	FBF23004-100	BASE TRIPOD	
M212	FBF23005-100	COVER JACK	
M213	FBF23066-100	SHOE	
M214	FBF23076-100	BUTTON FLASH	
M215	FBF23077-100	SHAFT FLASH	
M216	FBF23078-100	TSP FLASH	
M217	FBF23079-200	COVER FL TOP CH	
M218	FBF23080-100	ASSY PLATE STOPPER	
M219	FBF23083-100	COVER SHOE	
M220	FBF23088-100	PLATE BUTTON SIDE	
M221	FBF23089-100	TAPE WF PWB SIDE	
M222	FBF23090-100	FRAME MAIN	
M223	FBF23091-100	SHEET FRAME MAIN	
M224	FBF23130-100	SHEET LENS FPC	
M225	FBF23150-T00	MS5M2.0x7.5	
M226	FBF23153-100	SHEET PLATE SIDE	
M227	FBF08388-100	CONST FRONT	
M228	FBF08389-100	CONST TOP	
M229	FBF08390-100	CONST HOLDER BATTERY	
M230	FBF08391-100	CONST COVER BATTERY	
M231	FBF08392-100	CONST HOLDER LENS	
M232	FBF08393-100	CONST FLASH	
M233	FBF08394-100	CONST FL BOTTOM	
M234	FBF08395-100	CONST REAR	
M235	FBF08396-100	CONST LCD	
☆ M236	FBF08587-100	CONST MAIN	
M237	FBF08588-100	CONST EVF	
☆ M238	FBF08589-100	LENS ASSY Y-6231	
M239	FBF08748-100	CONST SIDE FPC	
M240	FCB2264-A201	Y6231 JACK ASSY	
M241	FFZ04344-100	JACK_MINI 4P YELLOW	
M242	FFZ08472-100	SPEAKER	
M243	FFZ08672-100	SHEET EMC LCD-T	



Revised:10.Jun.2011

5-3. Electrical parts

[Note]

The components indicated by mark  are critical for safety.
When indicated parts by reference number, please include the board name.

* Due to standardization, replacement in the parts list may be different from the parts list specified in the circuit or the components used on the set.

*Do not reuse removed parts. Always use new parts.

Ref No.	Parts No.	Description	Comment	PWB diagram
MAIN PWB ASSY				
[BATTERY]				
BT151	FFZ07222—100	BACKUP BATTERY		F-8
[FUSE]				
F851	FFP00039-253	FUSE		A-1

MEMO

6-1. List of Related Technical Updates Issued

[illegible]

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